

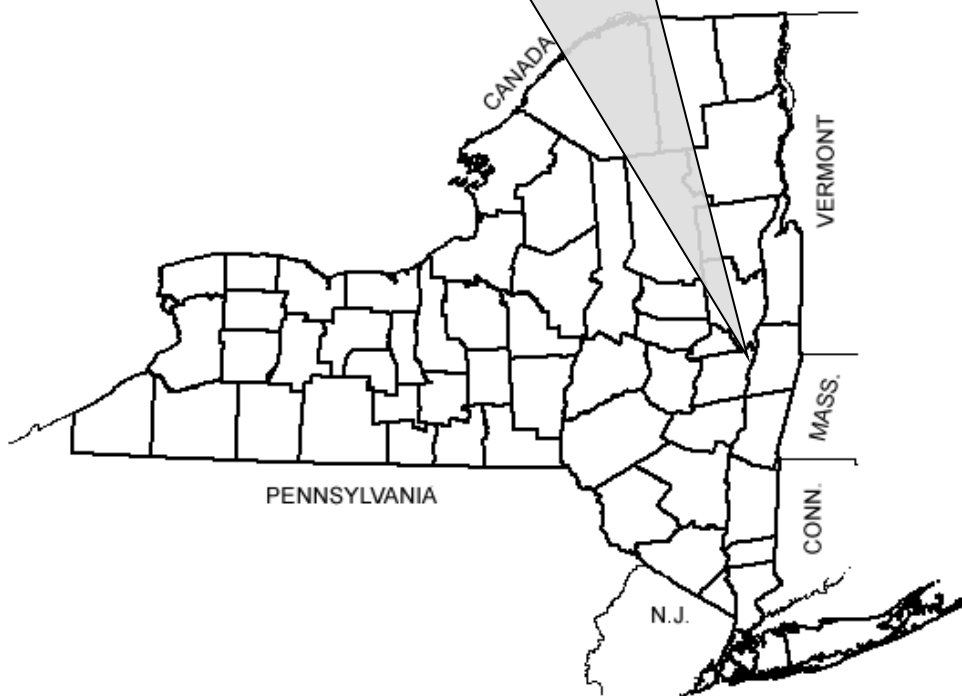
TRANSPORTATION

FINAL DESIGN REPORT / ENVIRONMENTAL IMPACT STATEMENT

Appendix J – Air Quality Analysis

August 2014

Highway Project
P.I.N. 1721.51
BINs: 1033141 / 1033142
Interstate 87 (I-87) Exit 4 Access
Improvements
Albany County



U.S. Department of Transportation Federal Highway Administration

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
ANDREW M. CUOMO, Governor

JOAN MCDONALD, Commissioner

PROPOSED



Table of Contents

1	Introduction	1
1.1	Project Alternates	2
1.1.1	No-Build Alternative:	2
1.1.2	Diamond Alternative	2
1.1.3	Flyover Alternative	3
2	CO Microscale	3
3	PM Microscale	4
4	Mesoscale Emission Analysis	5
4.1	Input Parameters for the Emissions Model	5
4.2	Regional Emissions for the Three Alternatives	5
5	Mobile Source Air Toxics (MSAT) Assessment	6
5.1	Qualitative MSAT Assessment	13
6	Lead Emissions	13
7	Construction Impact	13
8	Transportation Conformity Determination	14
9	Summary	15

Figures

Location Map

Alternatives Map

Attachments

Emissions Factors

Traffic Data

1 Introduction

The proposed project involves access improvements between I-87, Wolf Road, and the Albany International Airport. The project study area includes I-87 between Sand Creek Road and Exit 5 (RM 87/1108 2029), Wolf Road (known as Old Wolf Road) between the Exit 4 SB Exit Ramp and Albany-Shaker Road, Wolf Road between Albany-Shaker Road and Cerone Commercial Drive, and Albany-Shaker Road between Wolf Road and Meeting House Road. A total of approximately 8.0 miles of roadway within the Town of Colonie, Albany County are included in the project study area (see Figure 1). The estimated time of completion (ETC) for the project is 2016.

In addition to the project study area, a traffic influence area (TIA) has been established to reflect the area within which traffic patterns are closely related to or dependent on the roadway network within the project study area. The traffic influence area extends the project limits to include Watervliet-Shaker Road (NYS Route 155) between I-87 Exit 5 and Old Wolf Road, Watervliet-Shaker Road between Albany-Shaker Road and Sand Creek Road, Troy-Schenectady Road (NYS Route 7) between Albany-Shaker Road and I-87 Exit 6, Sand Creek Road between Watervliet-Shaker Road and Wolf Road, Wolf Road between Cerone Commercial Drive and Central Avenue (NYS Route 5), and I-87 between Exit 2 (NYS Route 5) and Exit 6 (NYS Route 7).

Descriptions of the roadways included in the project study area and traffic influence area are summarized in Table 1. Full traffic diagrams used in the analysis are included in Attachment 1.

Table 1 - Summary of Project Area Roadways				
Route Name	State Highway No.	Functional Classification	Length	Termini
Project Study Area				
Interstate 87	57-17	Urban Principal Arterial Interstate	3.0 mi.	Exit 2 to Exit 5
Albany-Shaker Rd	-	Urban Principal Arterial	1.1 mi.	Watervliet-Shaker Rd to Old Wolf Rd
Albany-Shaker Rd	-	Urban Arterial	0.25 mi.	Old Wolf Rd to Maxwell Rd
Wolf Rd	69-1	Urban Principal Arterial	1.25 mi.	Cerone Commercial Dr to Albany-Shaker Rd
Old Wolf Rd	-	Urban Minor Arterial	0.8 mi.	Albany-Shaker Rd to Watervliet-Shaker Rd
Watervliet-Shaker Rd	879	Urban Principal Arterial	0.75 mi.	Old Wolf Rd to I-87 Exit 5
Traffic Influence Area				
Troy-Schenectady Rd	604	Urban Principal Arterial	3.3 mi.	Albany-Shaker Rd to I-87
Wolf Rd	69-1	Urban Principal Arterial	1.2 mi.	Central Ave to Cerone Commercial Dr
Watervliet-Shaker Rd	-	Urban Principal Arterial	1.0 mi.	Sand Creek Rd to Albany-Shaker Rd
Sand Creek Rd	-	Minor Arterial	2.0 mi.	Watervliet-Shaker Rd to Wolf Rd
Central Ave	385	Primary Urban Arterial	1.0 mi.	I-87 Exit 2 Ramps

The proposed project is in an area classified as a "Former Subpart 1" nonattainment area under the 1997 8-Hr ozone standard (0.08 ppm). Under the 2008 8-hour ozone standard (0.07 ppm), the area is classified "attainment" effective July 20, 2012. In addition, it is anticipated that the conformity requirements under the 1997 ozone standard will be revoked, effective July 20, 2013, after which

transportation conformity would no longer being an applicable regulatory requirement of this project. However, until then, the requirements of the Clean Air Act Amendments of 1990 (CAAA90) require that the impact of certain transportation projects on air quality must be studied to determine if they conform to the purpose of the State Implementation Plan which is the attainment of the National Ambient Air Quality Standards (NAAQS). The transportation conformity regulation, "Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded, Developed or Approved Under Title 23 U.S.C or the Federal Transit Act" (40 CFR Parts 51 and 93), is used for conformity determinations. The project has been classified as a non-exempt project under these regulations.

The Albany-Schenectady-Troy metropolitan non-attainment area consists of Saratoga, Schenectady, Albany, Rensselaer, Montgomery, Greene, and Schoharie Counties and is classified as a Clean Air Act "Former Subpart 1" non-attainment area for the 8-hour ozone standard. The area is classified as attainment for all other Clean Air Act criteria pollutants.

Based on certified ambient air quality monitoring data, the US Environmental Protection Agency (EPA) determined that the Albany-Schenectady-Troy area attained both the 1-hour and 1997 8-hour ozone standards on January 6, 2010. However, EPA's determination did not constitute a formal redesignation to attainment and the transportation air quality conformity requirements still apply. However, this determination did suspend certain SIP requirements including the need to develop a motor vehicle emissions budget.

1.1 Project Alternates

More than 50 alternatives have been evaluated on a conceptual level for the proposed project. In addition to comparison of the alternatives to the purpose and need statement, a review of the alternatives by the project stakeholders resulted in identification of two alternatives for consideration in the Environmental Impact Statement (EIS). These alternatives, along with the No-Build Alternative, are described below. See Figure 2.

1.1.1 No-Build Alternative:

This alternative provides for the continued maintenance of the existing highway by the NYSDOT maintenance forces with no capital funds being expended.

1.1.2 Diamond Alternative

This alternative includes construction of a full-access, grade-separated diamond interchange, which connects I-87 to Wolf Road and Albany-Shaker Road via a new connector road. Improvements include construction of a new connector road between Wolf Road, at Metro Park Road, and Albany-Shaker Road, approximately 1300 ft west of the Albany-Shaker Road / Old Wolf Road intersection, and new Exit 4 interchange ramps to connect I-87 to the connector road. This alternative also includes replacement of the I-87 bridges over Albany-Shaker Road; construction of a new bridge to carry the connector road over I-87; pavement widening on Wolf Road and Albany-Shaker Road for additional travel lanes, turn lanes and medians; and removal of all of the existing Exit 4 Exit and Entrance Ramps as well as the existing SB frontage road between Exit 5 and Exit 4 and replacements of the existing Exit 5 SB Entrance Ramp.

Although the air quality impacts of Diamond Alternative are discussed in detail in the remainder of this report, the Diamond Alternative has been dismissed from consideration as a reasonable alternative in the Environmental Impact Statement for the following reasons:

- The estimated construction cost is \$74.61M.
- The Diamond Alternative requires 53.92 acres of ROW acquisitions, equating to \$12.6M in ROW costs.
- The Diamond Alternative results in the addition of 3.39 lane-miles of roadway. Future roadway maintenance costs directly correlate to the number of lane-miles of roadway.
- The proposed connector road bridge over I-87 requires 37,500 s.f. of deck area resulting in higher future bridge maintenance costs.
- The Diamond Alternative results in relocation of two (2) commercial businesses. The relocation of these commercial businesses represents removal of \$421,407 from the Town of Colonie tax base.
- The Diamond Alternative results in more than approximately 4.76 acres of wetland impacts.
- The Diamond Alternative results in a 41% increase over No-Build conditions in energy consumption and greenhouse gas emissions.

1.1.3 Flyover Alternative

This alternative includes construction of new Exit 4 ramps to complement the existing Exit 4 interchange. Improvements include construction of new ramps to connect I-87 NB and SB to Albany-Shaker Road approximately 1300 ft west of the Albany-Shaker Road / Old Wolf Road intersection and a new ramp to connect Albany-Shaker Road, approximately 1300 ft west of the Albany-Shaker Road / Old Wolf Road intersection, to I-87 SB. This alternative also includes replacement of the I-87 bridges over Albany-Shaker Road; removal of the existing Exit 4 SB Exit Ramp, existing SB frontage road between Exit 5 and Exit 4, and the Exit 4 SB Entrance Ramp; replacement of the existing Exit 5 SB Entrance Ramp; pavement widening and restriping for additional travel lanes, turn lanes, and medians on Albany-Shaker Road, I-87 NB between the existing Exit 4 NB Entrance Ramp and Exit 5 NB Exit Ramp, and on the existing Exit 4 NB Exit Ramp.

2 CO Microscale

Intersections impacted by a project with a build ETC, ETC+10, and ETC+20 level of service (LOS) of only A, B, or C, are generally excluded from microscale air quality analysis. Intersections within the project area exhibiting ETC, ETC +10 or ETC+20 build LOS D or worse are limited to the following intersections:

- Central Avenue & Wolf Road
- Sand Creek Road & Wolf Road
- Exit 5 Southbound & Watervliet Shaker Road

Intersections with LOS D or worse are subject to the second set of screening criteria, below:

- 10% or more reduction in the source-receptor distance (that is, the straight line distance between the edge of the travel lane closest to the receptor and that point of the receptor closest to the roadway);
- 10% or more increase in traffic volume on affected roadways for ETC, ETC+10 or ETC+20;
- 10% or more increase in vehicle emissions for ETC, ETC+10 or ETC+20;
- Any increase in the number of queued lanes for ETC, ETC+10 or ETC+20; or
- 20% reduction in speed, when build estimated average speed is at 30 mph or less.

The intersection of Exit 5 Southbound Off-Ramp and Watervliet Shaker Road is projected to have a 10% or more increase in traffic volume and requires further analysis, provided below. The two remaining intersections do not exceed any of the screening criteria thresholds and do not require further analysis.

Volume Threshold Analysis consists of utilizing the volumes anticipated along the highest approach to the intersection with information and tables found within the EPM. It analyzes the emissions anticipated against the volumes projected and determines if a volume threshold is exceeded to require modeling. Based on the analysis, the intersection of the Exit 5 Southbound Off-Ramp and Watervliet Shaker Road does not exceed this volume threshold. See Table 2, below for details

Table 2 – Volume Threshold Values

	Year		
	2016	2026	2036
Idle Emissions Rate (g/hr)	38.94	34.14	33.92
Free Flow Emissions Rate (g/mi.)	3.51	3.07	3.05
Corresponding Volume Threshold (VPH)	4000	4000	4000
Projected Volume (VPH) - Flyover Alt.	1004	924	1020
Projected Volume (VPH) - Diamond Alt.	1020	1046	1099

3 PM Microscale

Particulate Matter (PM) analysis screening criteria are primarily based upon the effect of a transportation project on traffic volumes with an emphasis on increases in the volume and percentage of diesel trucks on affected roadways. The current heavy percentages are as follows:

- I-87 – 2% during peak hours (8% daily from NYSDOT Pavement Data Report)
- Albany Shaker Rd – 3% AM, 2% PM (7% daily from NYSDOT Pavement Data Report)
- Wolf Road – 1% AM, 1% PM

The project is not projected to increase diesel truck volumes or overall heavy truck percentages in the project area and the construction duration is anticipated to be less than three years. According to the NYSDOT Project-Level PM Guidance, a PM microscale analysis is not warranted, however PM mesoscale analysis was performed, see Section 4 for additional details.

4 Mesoscale Emission Analysis

The project proposes new or significant modifications to interchanges on access-controlled facilities (I-87), which could significantly affect traffic conditions over a large area. It is therefore appropriate to consider regional air quality effects of the project by way of a mesoscale analysis.

The mesoscale emission analysis was conducted according to the air quality guidance in Chapter 1.1 of the NYSDOT EPM. The analysis was done for VOC, CO, NOx, and Particulate Matter (PM 2.5 and PM 10). Peak hour emissions were estimated for all three pollutants based on the annual average daily traffic volume (AADT) and peak hourly speed for each segment of the affected roadways. This information resulted in a relative comparison of the project's effect on regional air quality.

4.1 Input Parameters for the Emissions Model

Emission factors used in the mesoscale analysis were obtained from NYSDOT Mobile 6.2 Emission Factor Tables, and assumed default vehicle mix distribution for Albany, Rensselaer, Saratoga and Schenectady Counties (see Attachment 2). Emission factors supplied by these tables are based on the functional classification of each road studied, analysis year and vehicle speed. Emission factors for VOCs and NOx are generated using the summertime conditions (month of July) for the evaluation, while CO emission factors are based on wintertime conditions (January). Particulate Matter emissions factors were obtained from the NYSDOT MOBILE 6.2 PM Emission Factor Tables and NYSDOT winter vehicle mix tables.. Total emission levels are then obtained by multiplying the emission factors by total daily vehicle miles traveled.

4.2 Regional Emissions for the Three Alternatives

The emission estimates for each alternative were based on the vehicle volume and speed for each segment of the roadway. Due to the proposed interchange improvements, traffic patterns for the surrounding roadways will be changed. Vehicle speeds will be improved on different segments depending on the build alternatives. Vehicle emissions from the affected roadways have been analyzed to study the project's relative impact on regional emissions.

Vehicle average speed, segment lengths, traffic volumes and vehicle miles traveled for each segment of the affected roadways are summarized in Tables 3 through 5 for the build and no-build alternatives. Based on speed, emission factors for VOC, NOx, and CO are provided along with other parameters in these tables. Tables 6 through 8 also provide the calculated daily traveled (VMT) and emissions factors for each roadway segment for VOC, CO, and NOx in years 2016, 2026, and 2036 for the No-build, Diamond and Flyover alternatives, respectively; it should be noted that emissions factors for 2036 are not available, 2035 emissions factors are presented and utilized in the analysis. Total emissions for all years are provided in Tables 6 through 8 for CO, VOCs and NOx, respectively.

The results for VOCs, NOx, and PM 10 indicate that increases in VMT in all three alternatives are offset by predicted improvements in emissions technologies sufficient to lower levels over the entire study period. CO levels decrease from ETC to ETC +10 due to technological improvements, however VMT increases from ETC+10 to ETC+20 outweigh any technological improvements from ETC+10 to ETC+20. The No-Build Alternative has the least amount of emissions for all three pollutants compared to the Diamond and Flyover Alternatives. This is due in most part to lower VMT in the No-Build Alternative due to the redistribution of traffic in the build alternatives. The increase in CO emissions between the No-Build Alternative and proposed design alternatives range from 6.8% to 8.2% for ETC and from 5.7% to 8.0% for ETC+20. The increase in VOC emissions is range from 4.3% to 6.5% for ETC and ranges from 0.5% to 3.3% for ETC+20. The increase in NOx emissions between the No-Build Alternative and proposed design alternatives range from 5.0% to 7.4% for ETC and from 5.7% to 6.7% for ETC+20. The increase in PM 2.5 emissions between the No-Build Alternative and proposed design alternatives range from 7.4% to 8.3% for ETC and from 0.3% to 8.7% for ETC+20. The increase in PM 10 emissions between the No-Build Alternative and proposed design alternatives range from 7.5% to 8.4% for ETC and from 6.9% to 8.7% for ETC+20. The Diamond Alternative is projected to provide lower emissions than the Flyover Alternative. From the above regional emissions analysis, it can be concluded that the proposed project will not significantly increase regional emissions. All three alternatives will provide a decrease in emissions from ETC to ETC+20.

5 Mobile Source Air Toxics (MSAT) Assessment

Mobile source air toxics (MSAT) are compounds emitted from highway vehicles and non-road equipment which are known or suspected to cause cancer or other serious health and environmental effects. Controlling air toxic emissions became a national priority with the passage of the CAAA90, whereby Congress mandated that the EPA regulate 188 air toxic compounds, of which a group of 93 compounds emitted from mobile sources that are of concern. Particularly relevant to vehicle travel are acrolein, benzene, 1, 3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.

In 2006, FHWA issued guidance for analysis of MSATs from highway projects, and it updated this guidance in 2009 and 2012. A three tiered approach is used for analyzing MSAT in NEPA documents, depending on specific project circumstances:

- No analysis for projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The second category of projects includes those that serve to improve operations of highway, transit or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects. Most highway

Table 3 – No Build Alternative Mesoscale Traffic and Emissions Factor Summary

				No Build 2016							No Build 2026							No Build 2036									
Route Name	Segment	Functional Classification	Length (mi.)	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT
						CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10	
Interstate 87	Exit 2 - 4 NB	11	1.9	56,700	51	12.03	0.32	0.44	0.02	0.031	105,695	57,800	52	11.06	0.18	0.20	0.013	0.028	107,746	57,800	51	11.00	0.18	0.14	0.012	0.027	107,746
	Exit 4 - 5 NB	11	0.9	65,600	38	11.13	0.35	0.40	0.02	0.031	61,143	66,700	38	10.24	0.21	0.18	0.013	0.028	62,168	66,700	38	10.19	0.20	0.13	0.012	0.027	62,168
	Exit 5 - 4 SB	11	0.9	48,900	54	12.03	0.32	0.44	0.02	0.031	45,578	50,000	55	11.06	0.18	0.20	0.013	0.028	46,603	50,000	54	11.00	0.18	0.14	0.012	0.027	46,603
	Exit 4 - 2 SB	11	1.9	57,800	52	12.03	0.32	0.44	0.02	0.031	107,746	58,900	52	11.06	0.18	0.20	0.013	0.028	109,796	58,900	52	11.00	0.18	0.14	0.012	0.027	109,796
Albany-Shaker Rd (ASR)	Connector to Watervliet-Shaker	14	1.1	33,000	30	11.29	0.36	0.35	0.01	0.029	36,909	35,000	30	10.40	0.22	0.17	0.012	0.027	39,146	37,500	30	10.36	0.21	0.13	0.012	0.027	41,943
	Connector to Old Wolf *	14	0.2	33,000	30	11.29	0.36	0.35	0.01	0.029	6,152	35,000	30	10.40	0.22	0.17	0.012	0.027	6,524	37,500	30	10.36	0.21	0.13	0.012	0.027	6,990
	Old Wolf Rd to Wolf	14	0.1	28,700	25	11.43	0.38	0.36	0.01	0.029	3,567	30,430	25	10.52	0.24	0.18	0.012	0.027	3,782	37,500	8	13.36	0.56	0.22	0.012	0.027	4,660
	Wolf to Maxwell	14	0.3	18,960	27	11.43	0.38	0.36	0.01	0.029	5,891	19,770	37	10.42	0.21	0.17	0.012	0.027	6,142	20,670	37	10.37	0.20	0.13	0.012	0.027	6,422
Wolf Rd	Sand Creek to Central	14	0.7	25,340	18	12.38	0.51	0.42	0.014	0.029	17,320	30,940	18	11.37	0.34	0.21	0.012	0.027	21,148	32,980	18	11.32	0.33	0.17	0.012	0.027	22,542
	Sand Creek to metro Park	14	0.6	20,000	21	11.78	0.42	0.38	0.014	0.029	11,185	21,000	21	10.83	0.27	0.19	0.012	0.027	11,744	22,500	21	10.78	0.26	0.15	0.012	0.027	12,583
	Exit 4 NB off to ASR	14	0.1	23,500	11	13.54	0.65	0.48	0.014	0.029	2,044	24,870	10	12.40	0.45	0.25	0.012	0.027	2,163	26,360	10	12.34	0.44	0.20	0.012	0.027	2,293
	Exit 4 NB off to Metro Park	14	0.5	20,000	27	11.43	0.38	0.36	0.014	0.029	9,942	21,000	26	10.52	0.24	0.18	0.012	0.027	10,439	22,500	27	10.47	0.23	0.14	0.012	0.027	11,185
	Connector/Metro to ASR	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Old Wolf Rd	Offramp to Watervliet-Shaker Rd	16	0.5	8,080	15	12.38	0.51	0.42	0.014	0.029	4,017	8,110	14	12.40	0.45	0.25	0.012	0.027	4,031	8,130	14	12.34	0.44	0.20	0.012	0.027	4,041
	ASR to offramp	16	0.3	15,460	15	12.38	0.51	0.42	0.014	0.029	4,803	15,590	14	12.40	0.45	0.25	0.012	0.027	4,844	15,720	14	12.34	0.44	0.20	0.012	0.027	4,884
	ASR to Watervliet-Shaker Rd.	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Watervliet-Shaker Rd	Old Wolf Rd to I-87 Exit 5	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Western end to Exit 5 SB ramps	14	0.3	12,500	26	11.43	0.38	0.36	0.014	0.029	3,884	12,690	20	10.83	0.27	0.19	0.012	0.027	3,943	13,390	20	10.78	0.26	0.15	0.012	0.027	4,160
	Eastern end to Exit 5 NB ramps	14	0.9	16,070	29	11.43	0.38	0.36	0.014	0.029	14,978	16,580	28	10.52	0.24	0.18	0.012	0.027	15,454	16,900	28	10.47	0.23	0.14	0.012	0.027	15,752
	Exit 5 NB ramps to Exit 5 SB ramps	14	0.2	15,420	18	12.38	0.51	0.42	0.014	0.029	3,833	16,070	18	11.37	0.34	0.21	0.012	0.027	3,994	16,650	19	11.32	0.33	0.17	0.012	0.027	4,138
Connector Fly over	Flyover	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Connector Diamond	I-87 to ASR	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	I-87 to Wolf	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
				AADT Total						Total VMT	AADT Total						Total VMT	AADT Total								Total VMT	
				499,030						444,685	520,450						459,667	541,700					467,906				

Table 4 – Diamond Alternative Mesoscale Traffic and Emissions Factor Summary

			Diamond 2016								Diamond 2026								Diamond 2036							
Route Name	Segment	Length (mi.)	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					
					CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10	
Interstate 87	Exit 2 - 4 NB	1.9 mi	60,000	51	12.03	0.32	0.44	0.02	0.031	111,847	60,600	51	11.06	0.18	0.20	0.013	0.028	112,965	61,100	51	11.00	0.18	0.14	0.012	0.027	113,897
	Exit 4 - 5 NB	0.9 mi	62,800	44	11.42	0.33	0.40	0.02	0.031	58,533	63,300	44	10.50	0.20	0.18	0.013	0.028	58,999	63,900	44	10.44	0.19	0.14	0.012	0.027	59,558
	Exit 5 - 4 SB	0.9 mi	59,400	53	12.03	0.32	0.44	0.02	0.031	55,364	62,200	53	11.06	0.18	0.20	0.013	0.028	57,974	65,000	53	11.00	0.18	0.14	0.012	0.027	60,584
	Exit 4 - 2 SB	1.9 mi	57,800	49	11.72	0.32	0.42	0.02	0.031	107,746	58,300	48	10.77	0.19	0.19	0.013	0.028	108,678	58,900	47	10.72	0.18	0.14	0.012	0.027	109,796
Albany-Shaker Rd (ASR)	Connector to Watervliet-Shaker	1.1 mi	38,600	39	11.31	0.34	0.34	0.01	0.029	43,173	40,180	39	10.42	0.21	0.17	0.012	0.027	44,940	41,830	38	10.37	0.20	0.13	0.012	0.027	46,786
	Connector to Old Wolf *	0.2 mi	18,000	26	11.43	0.38	0.36	0.01	0.029	3,355	18,500	25	10.52	0.24	0.18	0.012	0.027	3,449	18,500	23	10.78	0.26	0.15	0.012	0.027	3,449
	Old Wolf Rd to Wolf	0.1 mi	20,390	24	11.78	0.42	0.38	0.01	0.029	2,534	21,200	24	10.83	0.27	0.19	0.012	0.027	2,635	22,050	21	10.78	0.26	0.15	0.012	0.027	2,740
	Wolf to Maxwell	0.3 mi	18,170	32	11.29	0.36	0.35	0.01	0.029	5,645	19,120	25	10.52	0.24	0.18	0.012	0.027	5,940	20,110	26	10.47	0.23	0.14	0.012	0.027	6,248
Wolf Rd	Sand Creek to Central	0.7 mi	26,770	21	11.78	0.42	0.38	0.01	0.029	18,298	28,000	20	10.83	0.27	0.19	0.012	0.027	19,138	29,300	20	10.78	0.26	0.15	0.012	0.027	20,027
	Sand Creek to metro Park	0.6 mi	14,000	22	11.78	0.42	0.38	0.01	0.029	7,829	15,000	22	10.83	0.27	0.19	0.012	0.027	8,389	16,500	21	10.78	0.26	0.15	0.012	0.027	9,227
	Exit 4 NB offramp to ASR	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Connector/metr o to ASR	0.6 mi	19,240	26	11.43	0.38	0.36	0.01	0.029	11,955	19,540	25	10.52	0.24	0.18	0.012	0.027	12,142	19,870	25	10.47	0.23	0.14	0.012	0.027	12,347
	Exit 4 NB off to Metro Park	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Old Wolf Rd	Offramp to Watervliet-Shaker Rd	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ASR to offramp	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ASR to Watervliet-Shaker Rd	0.8 mi	10,550	31	11.29	0.36	0.35	0.01	0.029	8,522	11,040	31	10.40	0.22	0.17	0.012	0.027	8,918	11,560	30	10.36	0.21	0.13	0.012	0.027	9,338
Watervliet-Shaker Rd	Old Wolf Rd to I-87 Exit 5	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Western Project Limits to Exit 5 SB Ramps	0.3 mi	14,070	23	11.78	0.42	0.38	0.01	0.029	4,371	14,790	23	10.83	0.27	0.19	0.012	0.027	4,595	15,560	22	10.78	0.26	0.15	0.012	0.027	4,834
	Eastern end to Exit 5 NB ramps	0.9 mi	15,840	27	11.43	0.38	0.36	0.01	0.029	14,764	16,390	27	10.52	0.24	0.18	0.012	0.027	15,276	16,950	27	10.47	0.23	0.14	0.012	0.027	15,798
	Exit 5 NB ramps to Exit 5 SB ramps	0.2 mi	17,040	16	12.38	0.51	0.42	0.01	0.029	4,235	17,190	15	11.37	0.34	0.21	0.012	0.027	4,273	14,160	15	11.32	0.33	0.17	0.012	0.027	3,519
Connector Fly over	Flyover	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connector Diamond	I-87 to ASR	0.6 mi	25,980	29	11.43	0.38	0.36	0.01	0.029	16,143	26,980	29	10.52	0.24	0.18	0.012	0.027	16,765	28,020	28	10.47	0.23	0.14	0.012	0.027	17,411
	I-87 to Wolf	0.2 mi	17,060	20	11.78	0.42	0.38	0.01	0.029	4,028	18,370	19	11.37	0.34	0.21	0.012	0.027	4,338	19,800	19	11.32	0.33	0.17	0.012	0.027	4,675
			AADT Total							Total VMT	AADT Total							Total VMT	AADT Total							Total VMT
			495,710							478,343	510,700							489,412	523,110							500,235

Table 5 – Flyover Alternative Mesoscale Traffic and Emissions Factor Summary

			Flyover 2016								Flyover 2026								Flyover 2036											
Route Name	Segment	Length (mi.)	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT	AADT	Speed (mph)	Emission Factor (g/mi.)					VMT				
					CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10				CO	VOC	NOX	PM 2.5	PM 10					
Interstate 87	Exit 2 - 4 NB	1.9 mi	61,100	52	12.03	0.32	0.44	0.02	0.031	113,897	62,200	52	11.06	0.18	0.20	0.013	0.028	115,948	62,800	52	11.00	0.18	0.14	0.012	0.027	117,066				
	Exit 4 - 5 NB	0.9 mi	65,600	38	11.13	0.35	0.40	0.02	0.031	61,143	66,100	38	10.24	0.21	0.18	0.013	0.028	61,609	66,100	38	10.19	0.20	0.13	0.012	0.027	61,609				
	Exit 5 - 4 SB	0.9 mi	58,900	54	12.03	0.32	0.44	0.02	0.031	54,898	62,200	54	11.06	0.18	0.20	0.013	0.028	57,974	65,000	54	11.00	0.18	0.14	0.012	0.027	60,584				
	Exit 4 - 2 SB	1.9 mi	59,400	51	12.03	0.32	0.44	0.02	0.031	110,728	60,000	51	11.06	0.18	0.20	0.013	0.028	111,847	60,600	51	11.00	0.18	0.14	0.012	0.027	112,965				
Albany-Shaker Rd (ASR)	Connector to Watervliet-Shaker	1.1 mi	37,990	38	11.31	0.34	0.34	0.01	0.029	42,491	38,590	37	10.42	0.21	0.17	0.012	0.027	43,162	39,520	37	10.37	0.20	0.13	0.012	0.027	44,202				
	Connector to Old Wolf *	0.2 mi	19,000	19	12.38	0.51	0.42	0.01	0.029	3,542	20,500	19	11.37	0.34	0.21	0.012	0.027	3,821	22,000	19	11.32	0.33	0.17	0.012	0.027	4,101				
	Old Wolf Rd to Wolf	0.1 mi	20,870	15	12.38	0.51	0.42	0.01	0.029	2,594	22,320	14	12.40	0.45	0.25	0.012	0.027	2,774	19,000	15	11.32	0.33	0.17	0.012	0.027	2,361				
	Wolf to Maxwell	0.3 mi	17,340	30	11.29	0.36	0.35	0.01	0.029	5,387	19,080	30	10.40	0.22	0.17	0.012	0.027	5,928	20,190	30	10.36	0.21	0.13	0.012	0.027	6,273				
Wolf Rd	Sand Creek to Central	0.7 mi	28,560	18	12.38	0.51	0.42	0.01	0.029	19,521	30,010	18	11.37	0.34	0.21	0.012	0.027	20,512	31,570	18	11.32	0.33	0.17	0.012	0.027	21,578				
	Sand Creek to metro Park	0.6 mi	25,460	28	11.43	0.38	0.36	0.01	0.029	14,238	26,890	27	10.52	0.24	0.18	0.012	0.027	15,038	28,310	27	10.47	0.23	0.14	0.012	0.027	15,832				
	Exit 4 NB off to ASR	0.6 mi	17,440	22	11.78	0.42	0.38	0.01	0.029	1,517	17,850	21	10.83	0.27	0.19	0.012	0.027	1,553	18,300	21	10.78	0.26	0.15	0.012	0.027	1,592				
	Connector/Metro to ASR	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	Exit 4 NB off to Metro Park	0.8 km	18,500	33	11.29	0.36	0.35	0.01	0.029	9,196	19,000	33	10.40	0.22	0.17	0.012	0.027	9,445	19,500	33	10.36	0.21	0.13	0.012	0.027	9,693				
Old Wolf Rd	Offramp to Watervliet-Shaker Rd	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	ASR to offramp	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	ASR to Watervliet-Shaker Rd	0.8 mi	5,600	31	11.29	0.36	0.35	0.01	0.029	4,524	9,890	31	10.40	0.22	0.17	0.012	0.027	7,989	10,400	29	10.47	0.23	0.14	0.012	0.027	8,401				
Watervliet-Shaker Rd	Old Wolf Rd to I-87 Exit 5	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	Western Project Limits to Exit 5 SB ramps	0.3 mi	12,150	26	11.43	0.38	0.36	0.01	0.029	3,775	13,230	25	10.52	0.24	0.18	0.012	0.027	4,110	14,190	25	10.47	0.23	0.14	0.012	0.027	4,409				
	Eastern end to Exit 5 NB ramps	0.9 mi	16,370	28	11.43	0.38	0.36	0.01	0.029	15,258	16,990	34	10.40	0.22	0.17	0.012	0.027	15,836	17,640	27	10.47	0.23	0.14	0.012	0.027	16,441				
	Exit 5 NB ramps to Exit 5 SB ramps	0.2 mi	15,260	16	12.38	0.51	0.42	0.01	0.029	3,793	15,490	16	11.37	0.34	0.21	0.012	0.027	3,850	16,910	16	11.32	0.33	0.17	0.012	0.027	4,203				
Connector Fly over	Flyover	0.6 mi	28,020	35	11.31	0.34	0.34	0.01	0.029	15,670	29,450	35	10.42	0.21	0.17	0.012	0.027	16,469	31,130	35	10.37	0.20	0.13	0.012	0.027	17,409				
Connector Diamond	I-87 to ASR	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	I-87 to Wolf	0 mi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
			AADT Total							Total VMT							Total VMT		AADT Total							Total VMT				
			507,560							482,171		529,790										543,160							508,720	

projects that need an MSAT assessment fall into this category. Based on the example projects defined in the FHWA guidance "Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents" (updated December 6, 2012), the CSSTP-007-00(694), CSMSL-0006-00(293) and CSSTP-0006-00(877) projects would be classified as projects with Low Potential MSAT Effects. Thus, a qualitative analysis is appropriate (see Section 5.1).

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Figure 2.

Table 6 – CO Emissions Summary

Alternative	Year					
	2016		2026		2036	
	Difference from No Build		Difference from No Build		Difference from No Build	
	(Kg/day)	Alt. (%)	(Kg/day)	Build Alt. (%)	(Kg/day)	Build Alt. (%)
No Build	5,250	N/A	5,002	N/A	5,078	N/A
Diamond	5,608	6.8%	5,279	5.5%	5,369	5.7%
Flyover	5,679	8.2%	5,394	7.8%	5,483	8.0%

Table 7 – VOC Emissions Summary

Alternative	Year					
	2016		2026		2036	
	Difference from No Build		Difference from No Build		Difference from No Build	
	(Kg/day)	Alt. (%)	(Kg/day)	Alt. (%)	(Kg/day)	Build Alt. (%)
No Build	156	N/A	97	N/A	98	N/A
Diamond	162	3.8%	100	3.1%	99	1.0%
Flyover	166	6.4%	101	4.1%	102	4.1%

Table 8 – NOx Emissions Summary

Alternative	Year					
	2016		2026		2036	
	Difference from No Build		Difference from No Build		Difference from No Build	
	(Kg/day)	Alt. (%)	(Kg/day)	Alt. (%)	(Kg/day)	Build Alt. (%)
No Build	185	N/A	89	N/A	66	N/A
Diamond	194	4.9%	93	4.5%	70	6.1%
Flyover	199	7.6%	95	6.7%	71	7.6%

Table 9 – PM 2.5 Emissions Summary

Alternative	Year					
	2016		2026		2036	
	Difference from No Build		Difference from No Build		Difference from No	
	(Kg/day)	Alt. (%)	(Kg/day)	Alt. (%)	(Kg/day)	Build Alt. (%)
No Build	6.6	N/A	5.8	N/A	5.6	N/A
Diamond	7.1	7.6%	6.2	6.9%	5.6	0.0%
Flyover	7.2	9.1%	6.3	8.6%	6.1	8.9%

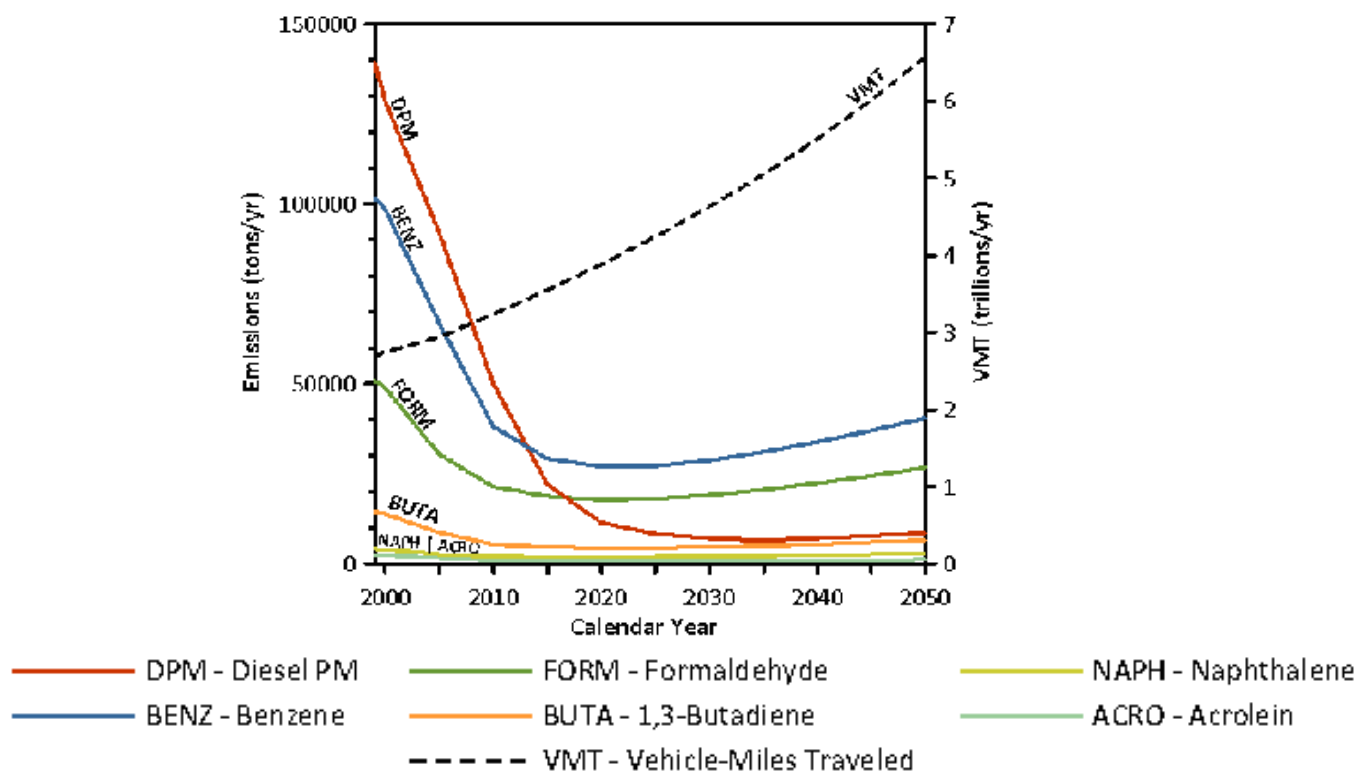
Table 10 – PM 10 Emissions Summary

Alternative	Year					
	2016		2026		2036	
	Difference from No Build		Difference from No Build		Difference from No	
	(Kg/day)	Alt. (%)	(Kg/day)	Alt. (%)	(Kg/day)	Build Alt. (%)
No Build	13.5	N/A	12.7	N/A	12.7	N/A
Diamond	14.5	7.4%	13.5	6.3%	13.5	6.3%
Flyover	14.6	8.1%	13.8	8.7%	13.8	8.7%

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

**Figure 2: NATIONAL MSAT EMISSION TRENDS 1999 - 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOBILE6.2 MODEL**



Note:

- (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
- (2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

5.1 Qualitative MSAT Assessment

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives.

For each alternative assessed, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative is slightly lower than for any of the Build Alternatives, higher levels of MSAT could be expected from any of the Build Alternatives compared to the No Build. Table 3 below, summarizes the forecasted No-Build and Build Alternative VMT proximate to the project. For additional information concerning traffic and VMT, please refer to Tables 4 – 6. In addition, because the estimated VMT under each of the Build Alternatives are nearly the same, varying by less than 2 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Table 11 – Vehicle Miles Traveled Summary

VMT		Year		
		2016	2026	2036
Alternative	No Build	444,685	459,667	467,906
	Diamond	478,343	489,412	500,235
	Flyover	482,171	497,864	508,720

6 Lead Emissions

Emissions of lead from motor vehicles have decreased significantly as a result of lead being phased out as an additive in motor vehicle fuels. The FHWA has advised that microscale lead analysis for highway projects is not needed or warranted. Lead emissions from highways have been virtually eliminated as a result of the regulation and legislation prohibiting the manufacture, sale, or introduction into commerce of any engine requiring leaded gasoline since model year 1992, sale of only unleaded gasoline, and the requirement for reformulated gasoline to contain no heavy metals (such as lead).

7 Construction Impact

During construction, temporary air quality impacts will be minimized to the maximum extent practicable. Construction activities can temporarily degrade air quality by way of dust generation due

to movement of soil, particulate emissions associated with construction equipment operating with diesel fuel, increased emissions from construction worker vehicles or traffic diversions and detours.

Airborne dust levels will be controlled through wetting of soil surfaces, covering of trucks and other dust sources. These requirements will be included as part of the specifications of the construction contract.

This project will not have any significant traffic diversions or detours.

8 Transportation Conformity Determination

The transportation conformity regulation, "Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded, Developed or Approved Under Title 23 U.S.C or the Federal Transit Act" (40 CFR Parts 51 and 93), and 6 NYCRR Part 240 are used for conformity determinations. The project has been classified as a non-exempt project under these regulations.

Under the requirements of the Clean Air Act Amendments of 1990 (CAAA90), the impact of certain transportation projects on air quality must be studied to determine if they conform to the purpose of the State Implementation Plan which is the attainment of the National Ambient Air Quality Standards (NAAQS). While the project is not located within a CO or PM10 nonattainment or maintenance area, the proposed project is presently in an ozone nonattainment area and thus subject to the transportation conformity requirements. The project is listed in the *Albany-Schenectady-Troy 8-Hour Ozone Non-Attainment Area Transportation/Air Quality Conformity Determination*, dated October 20, 2011, as Project No. A240 in Table A2 – Description of Project Scopes for Non-Exempt Projects In the 2015 Build Network for the CDTC 2010-15 Transportation Improvement Program and the New Visions 2035 Regional Transportation Plan.

The above air quality analysis is based on the latest planning assumptions used by Capital District Transportation Committee (CDTC) Metropolitan Planning Organization (MPO) the MPO for the metropolitan Albany area. The analysis is consistent with the most recent CDTC estimates of traffic volume growth rates and other traffic parameters, including forecast changes in vehicle speed. CDTC developed these estimates based on current and future population, employment, and travel and congestion information. The latest planning assumptions utilized in this air quality analysis are consistent with those in the current conformity determination for the transportation plan and TIP. Those assumptions formed the basis for the development of the project-specific traffic parameters used in the air quality analysis for this project.

Transit service, increases in transit fares and road and bridge tolls, effectiveness of previously implemented transportation control measures and other similar regional planning assumptions did not materially affect the development and selection of the alternatives for this project, nor is it expected that the completion of this project will materially affect these planning assumptions.

The air quality analysis has used emission factors from the MOBILE 6.2, the latest EPA emission model available at the time the analysis was begun.

The Interagency Consultation Group (ICG) (composed of representatives from FHWA, FTA, EPA, NYSDOT, and NYSDEC) concurred that the CDTC STEP travel forecasting model is valid for use in transportation conformity determinations and concurred with the air quality classifications of all projects in the CDTC and A/GFTC TIPs and Plans. On December 9, 2011, the FHWA and FTA approved CDTC's transportation conformity determination that showed its 2011-2015 TIP and 2035 Plan containing this project conformed to the State Implementation Plan for Air Quality.

As part of the environmental processing for this project under the National Environmental Policy Act and the State Environmental Quality Review Act, public information meetings will be conducted to gather and address any concerns potentially affected parties may have.

Based on the results of the analysis/screening, the project will not cause or contribute to any new localized CO violations or increase the frequency or severity of existing CO violations in the area substantially affected by the project.

The project comes from the currently conforming transportation plan and TIP. The Transportation Plan has been found conform to the State Implementation Plan (SIP), by CDTC on September 15, 2011. CDTC's TIP was incorporated into the Statewide TIP which took effect on December 9, 2012.

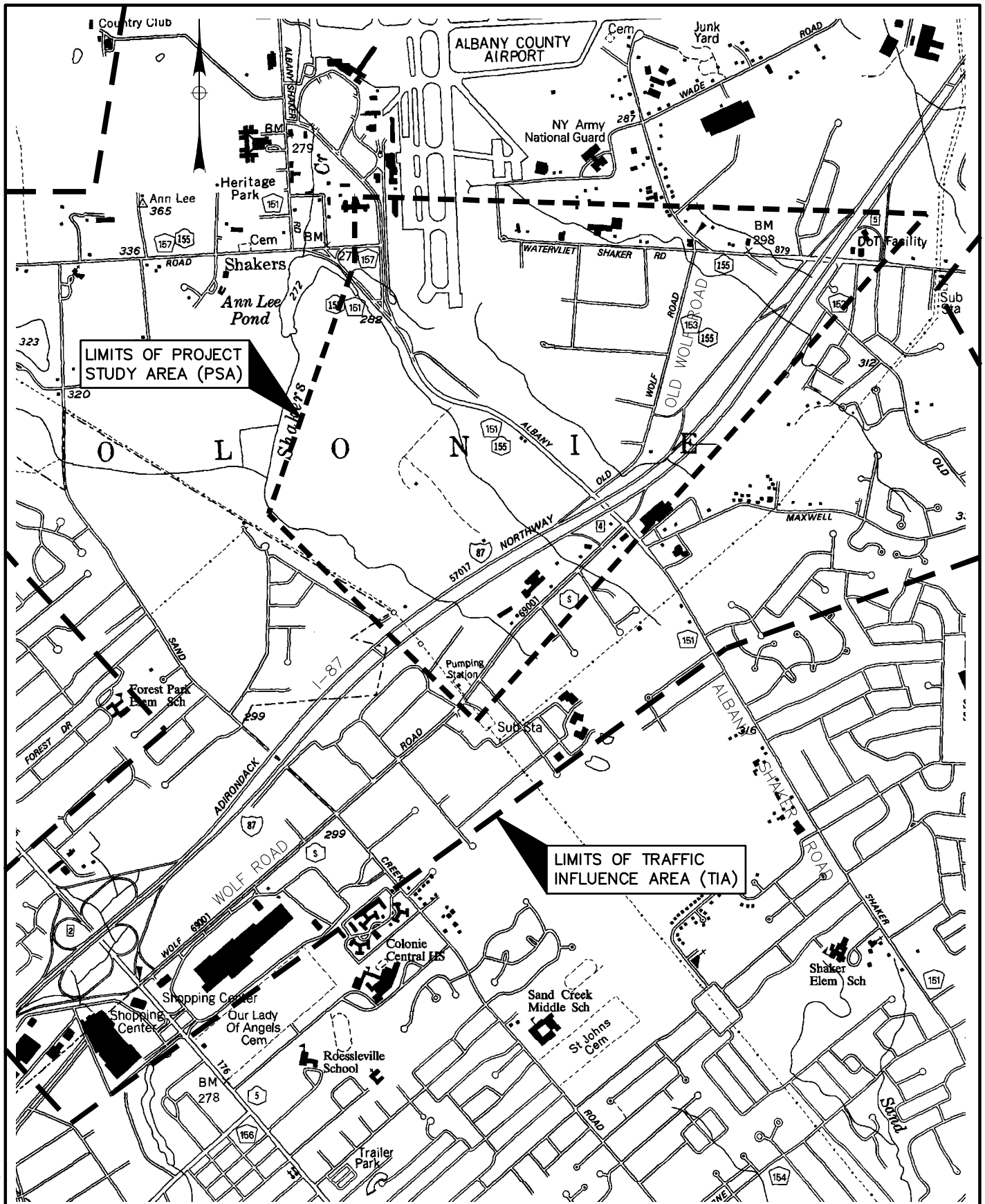
The project is consistent with the policies and purpose of the conforming transportation plan and will not interfere with other projects in the transportation plan.

The project design scope and concept have not changed since the TIP and plan conformity determinations were made and the facility's design scope and concept have not changed from that assumed in the conforming TIP and plan.

9 Summary

The regional emission estimates for the proposed roadway realignment and lane additions demonstrate that the proposed Alternatives will contribute minor (<9%) regional emission increases for VOC, CO, NO_x, and Particulate Matter (PM 2.5 and PM 10) when compared to the same year No-Build Alternative. However, emissions generated as a result of the project will decrease overall from ETC. The CO microscale air quality screening indicates that the proposed project is not expected to cause any air quality violations or increase the severity or frequency of existing CO violations. The air quality analysis has followed the methodology as described in NYSDOT's Air Quality Chapter in the EPM. Based on the analyses performed, the proposed alternatives will not have significantly adverse effect on local NAAQS. The project complies with the requirement of CAAA90 and the final rule on transportation conformity.

Figures



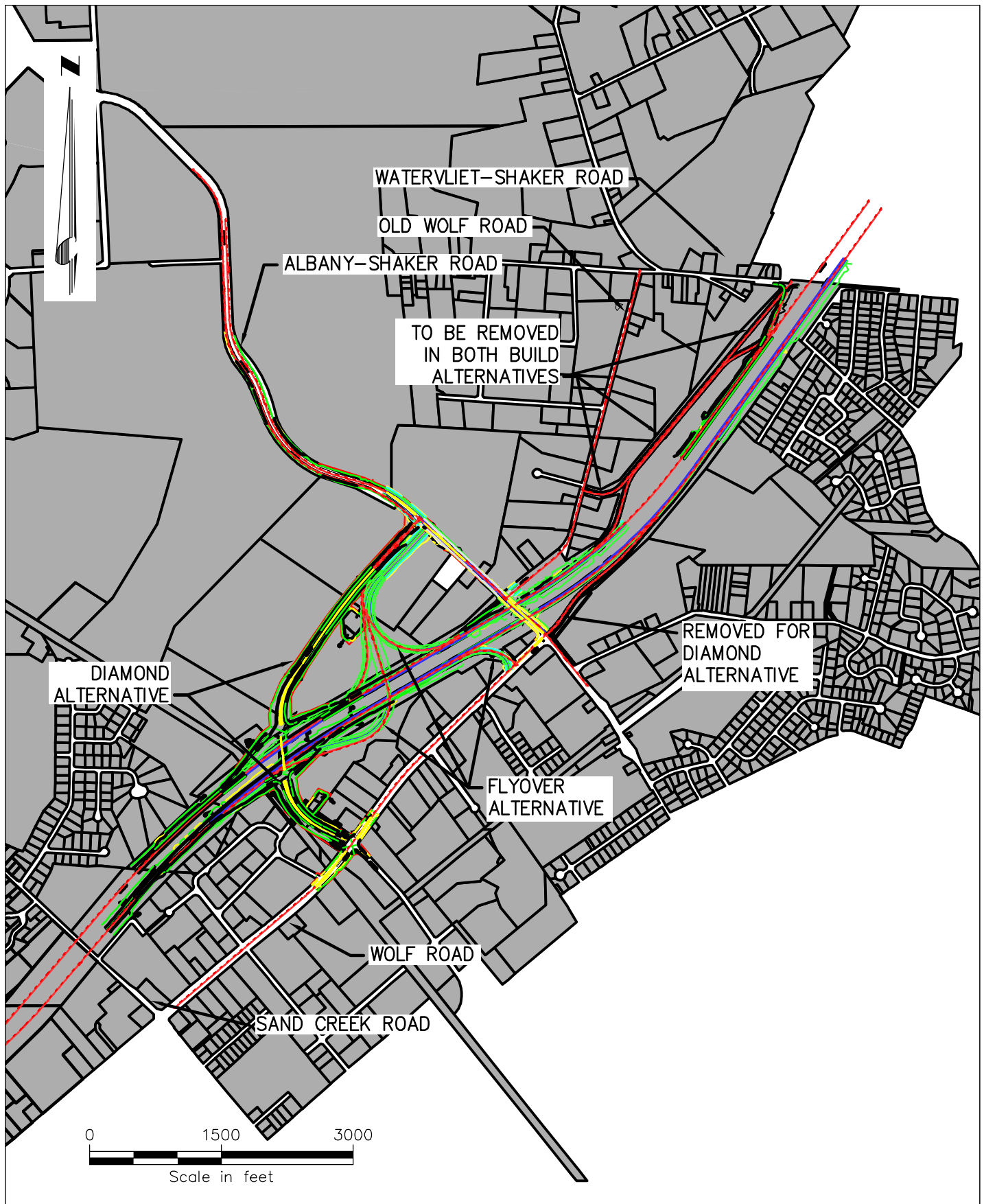
CLOUGH HARBOUR & ASSOCIATES LLP
 111 Winners Circle, PO Box 5269 Albany, NY 12205-0269
 Main: (518) 453-4500 www.cloughharbour.com

PROJECT LOCATION MAP

INTERSTATE 87 (I-87) EXIT 3, AIRPORT CONNECTOR
 TOWN OF COLONIE, ALBANY COUNTY, NEW YORK
 P.I.N. 1721..51.121

NOT TO SCALE

FIGURE 1



Drawing Copyright© 2010



111 Winners Circle, PO Box 5269 • Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

ALTERNATIVES MAP

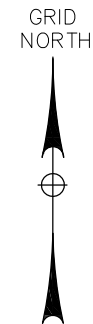
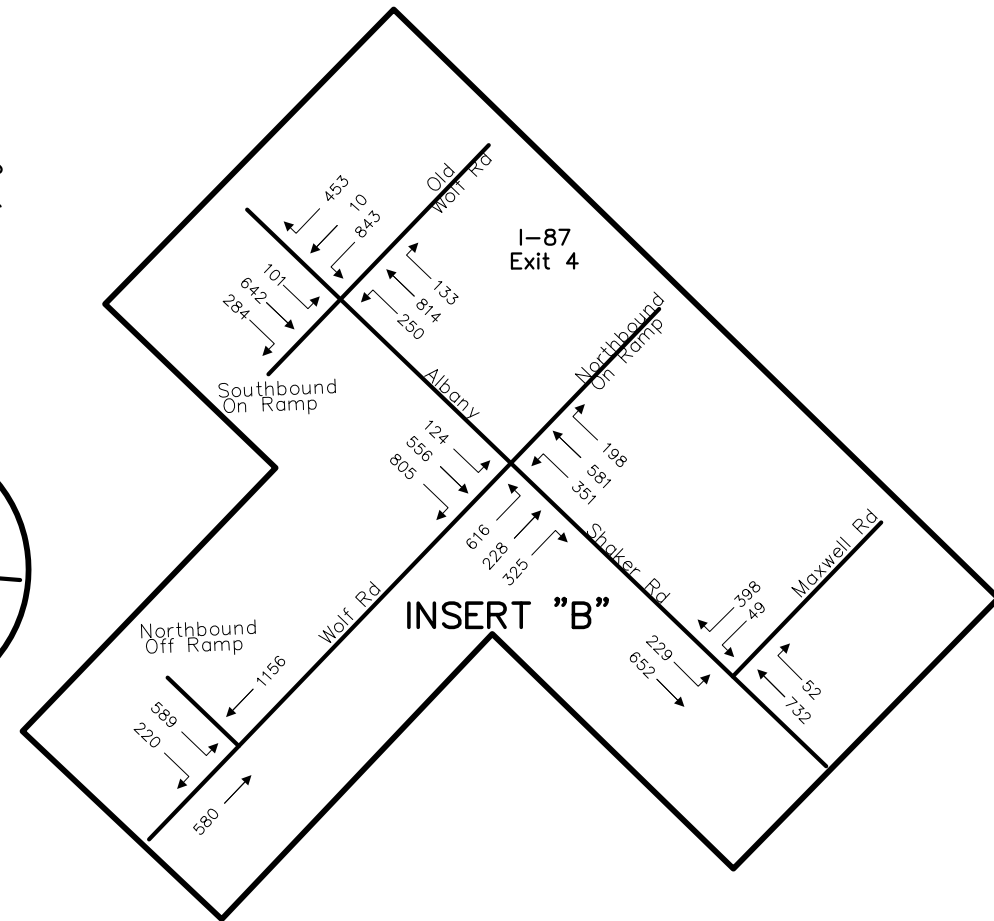
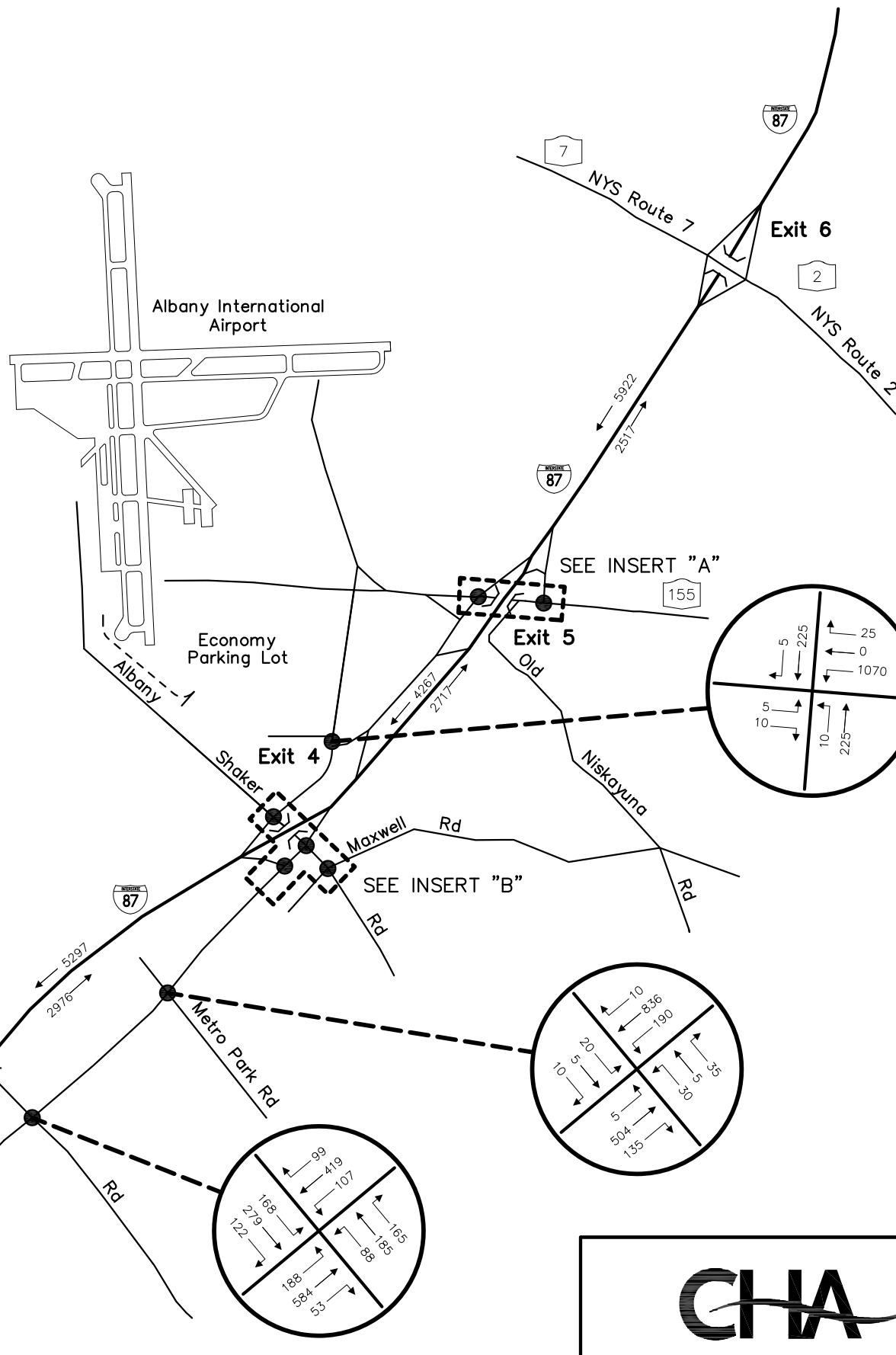
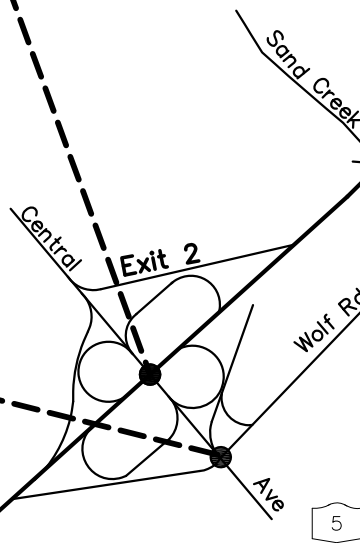
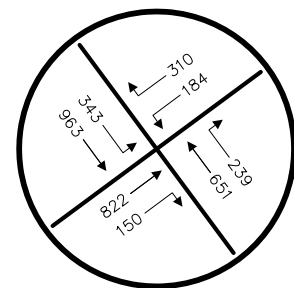
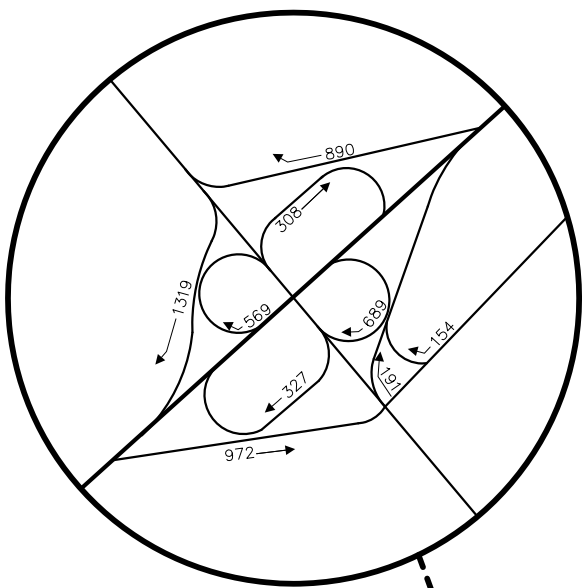
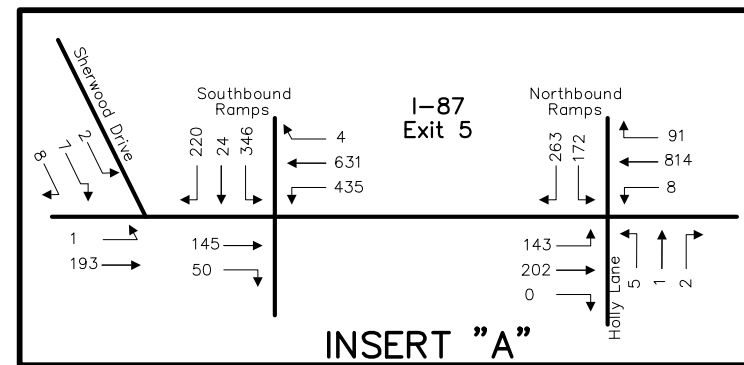
INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

FIGURE

2

DATE: 1/12

Attachment 1
Traffic Diagrams



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

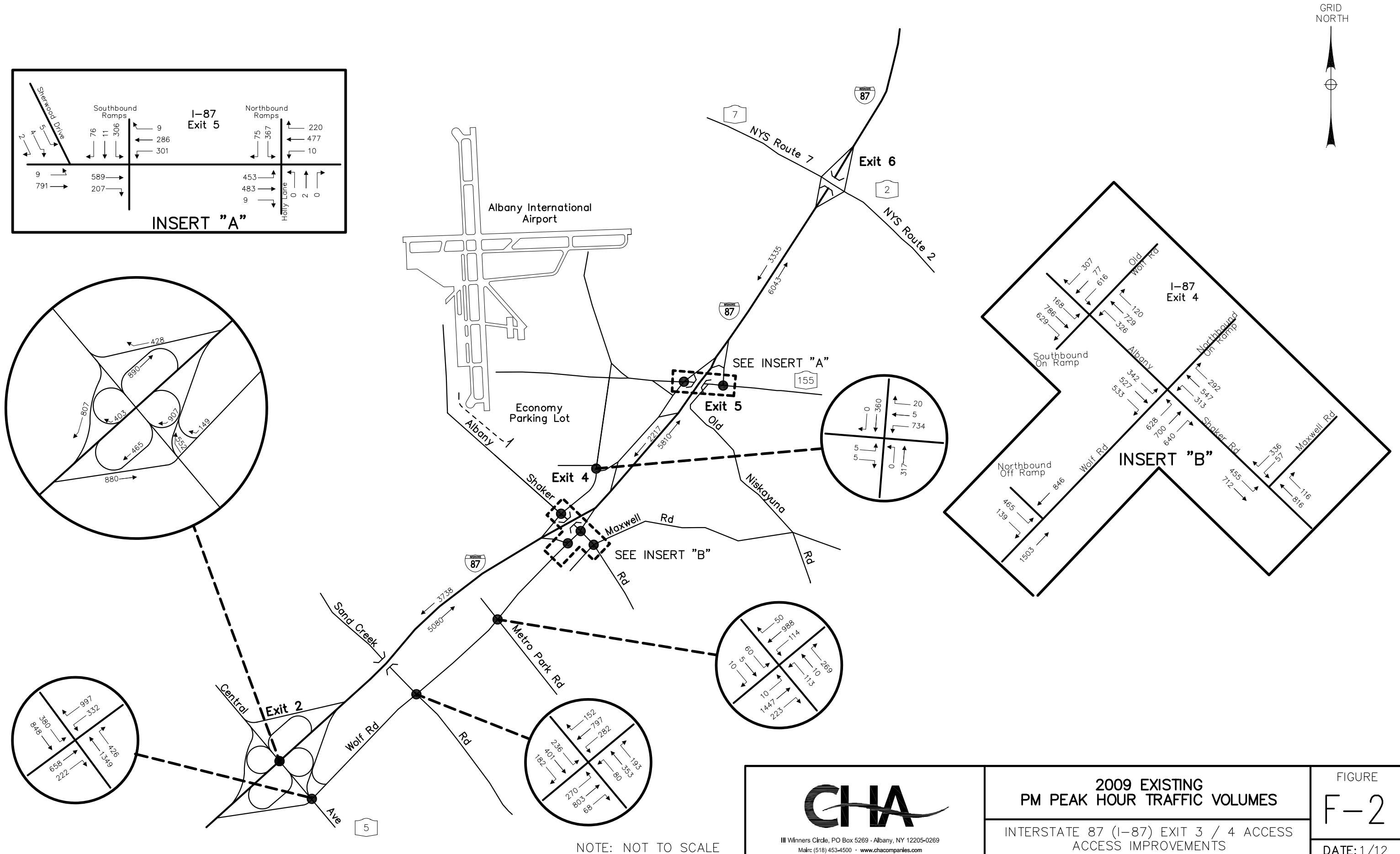
**2009 EXISTING
AM PEAK HOUR TRAFFIC VOLUMES**

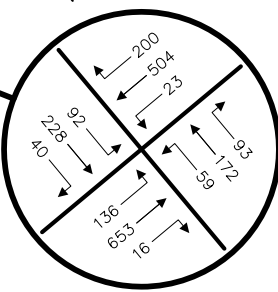
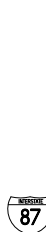
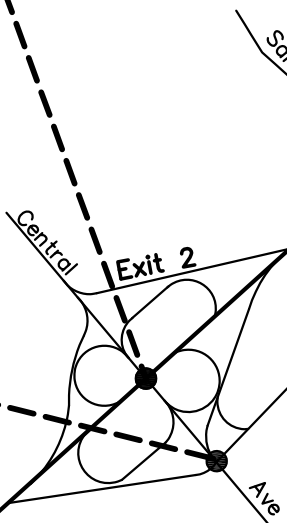
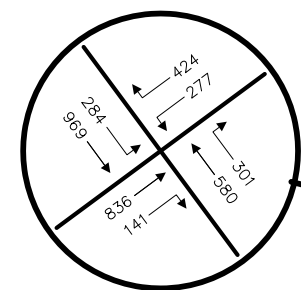
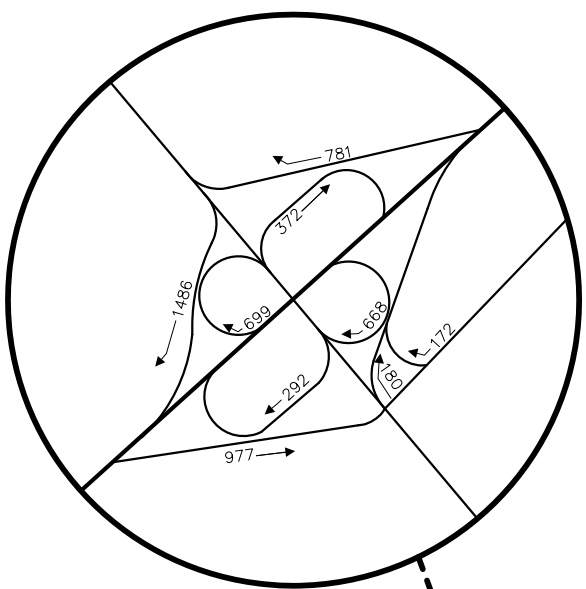
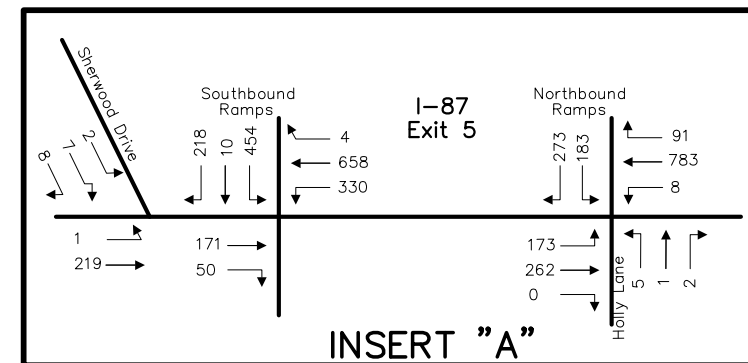
**INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS**

FIGURE

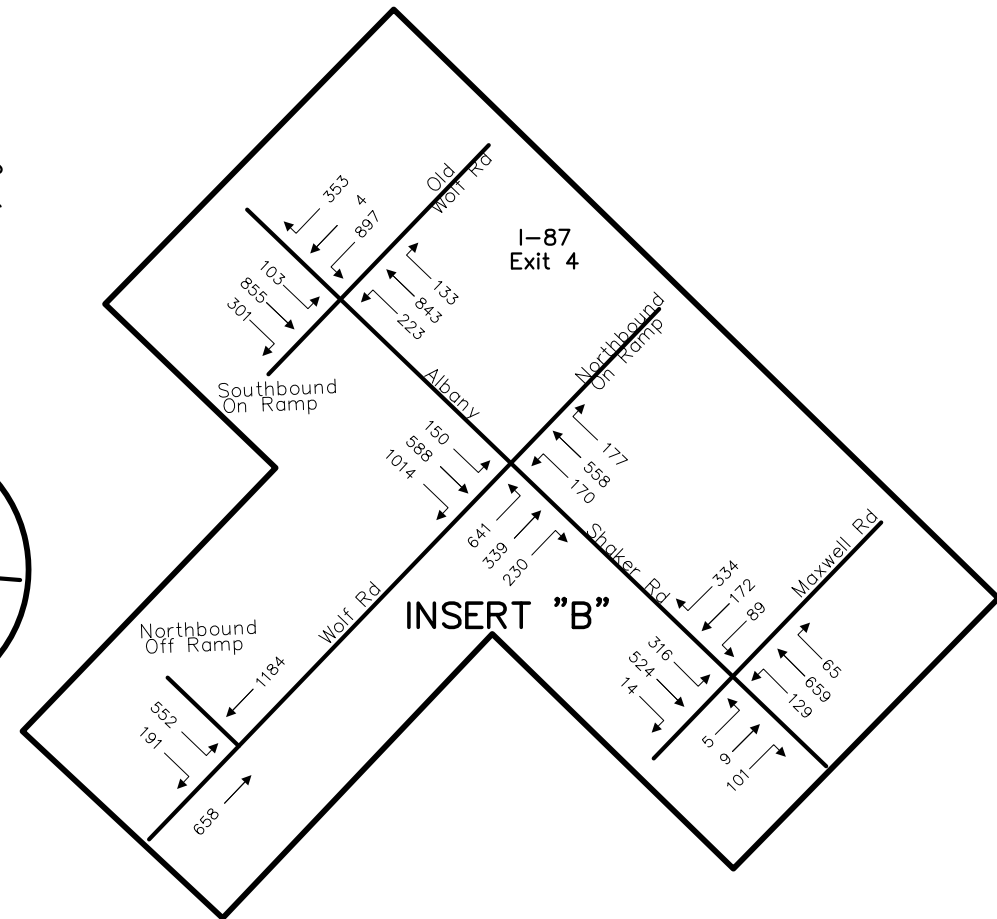
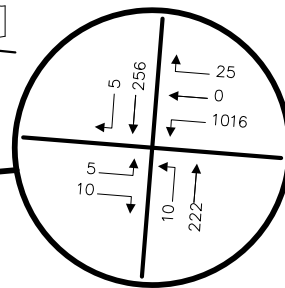
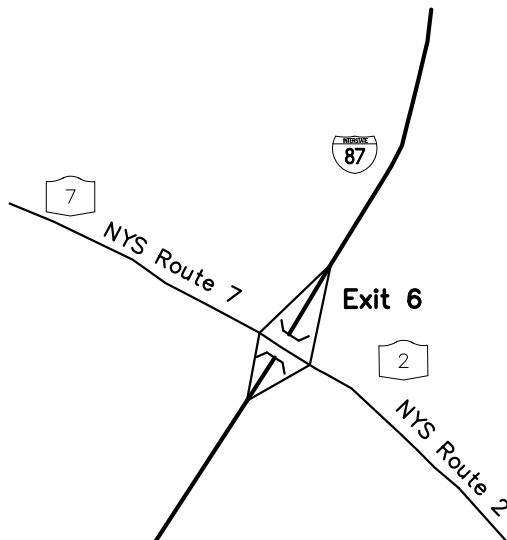
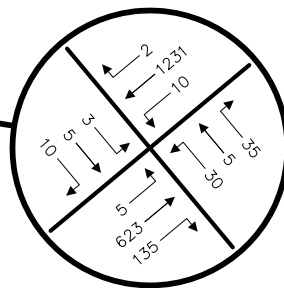
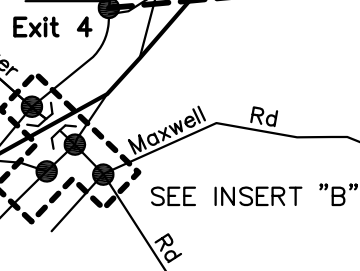
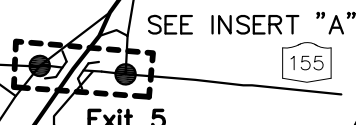
F-1

DATE: 1/12





NOTE: NOT TO SCALE



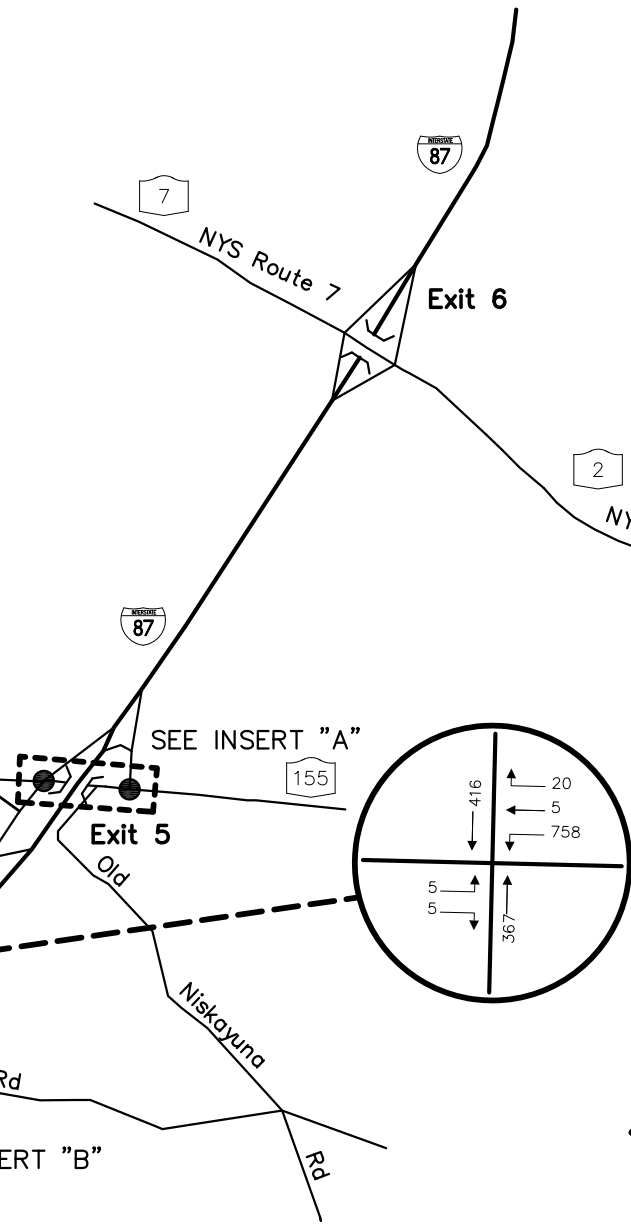
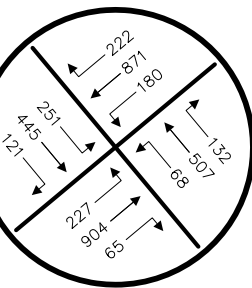
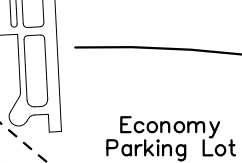
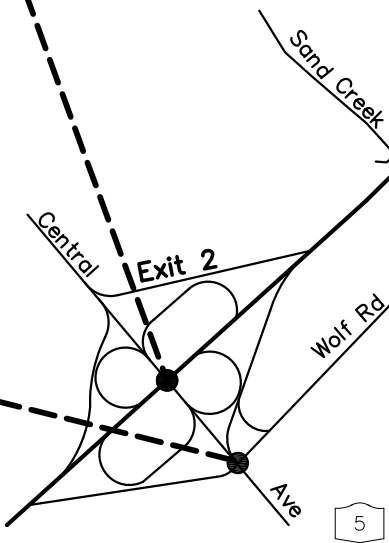
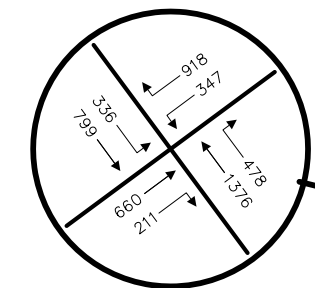
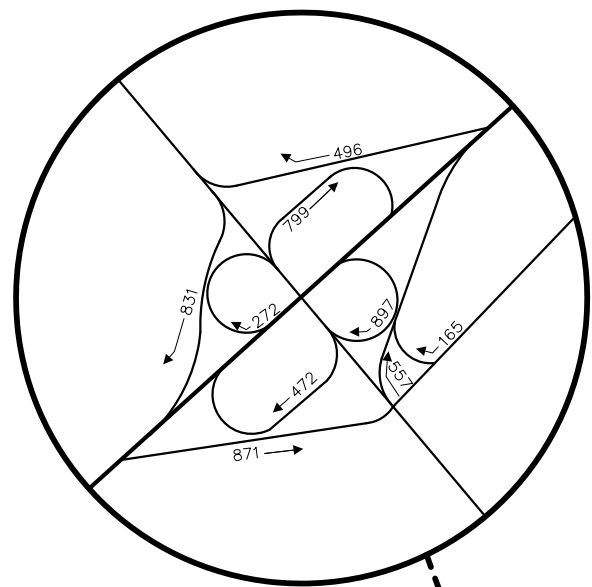
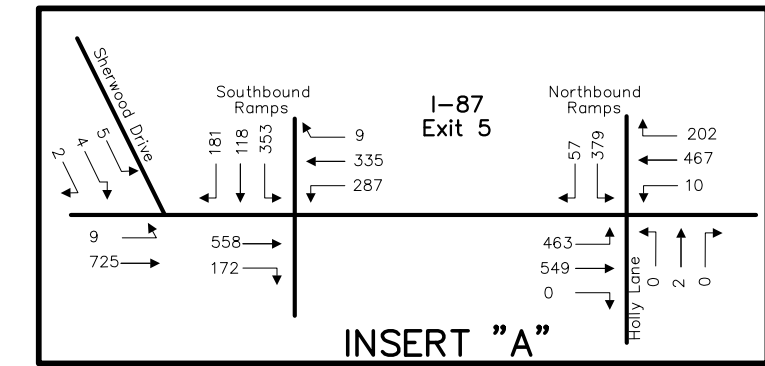
III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

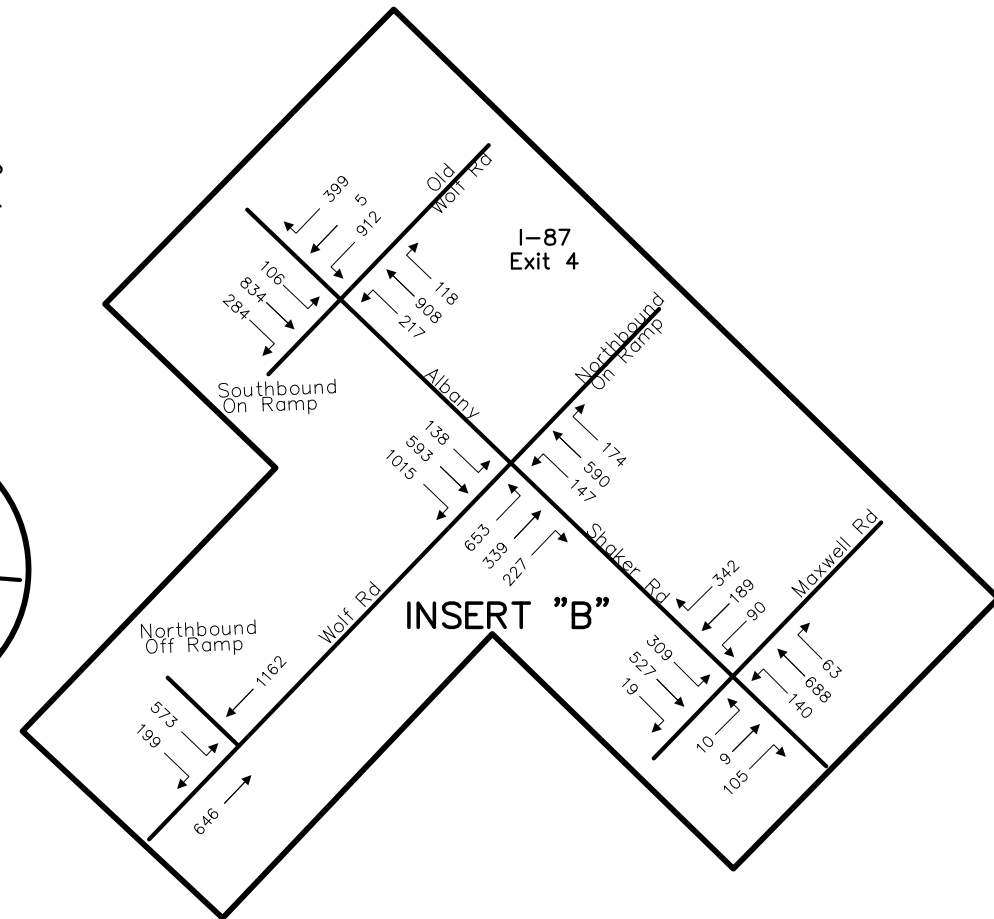
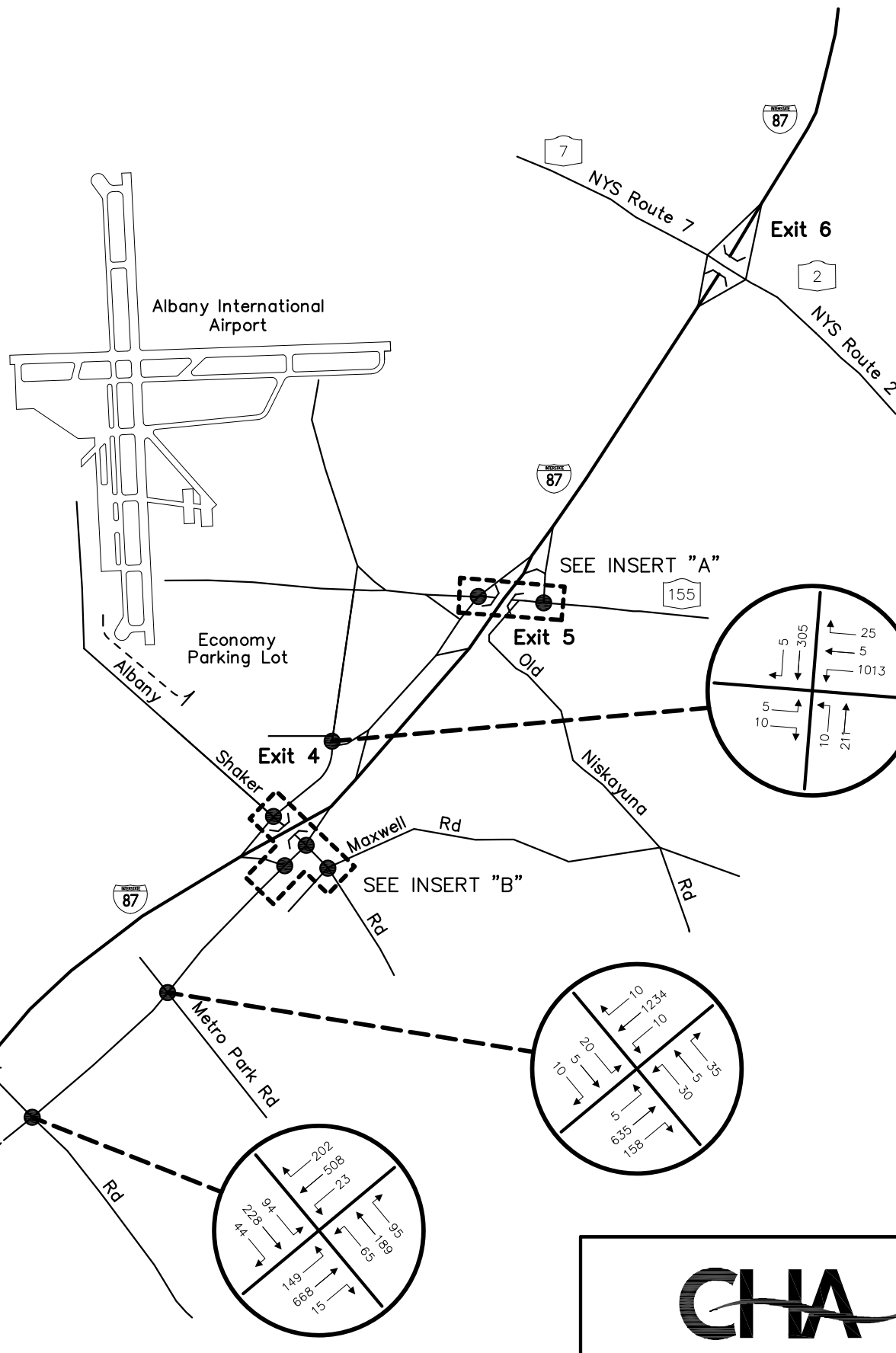
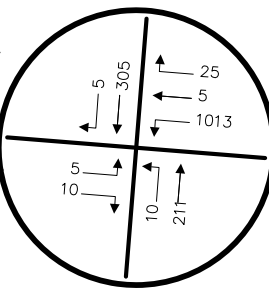
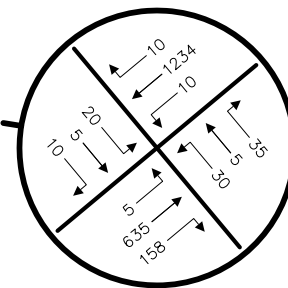
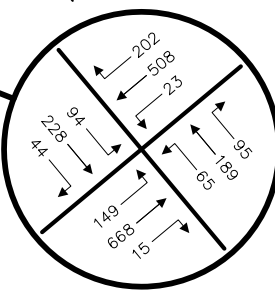
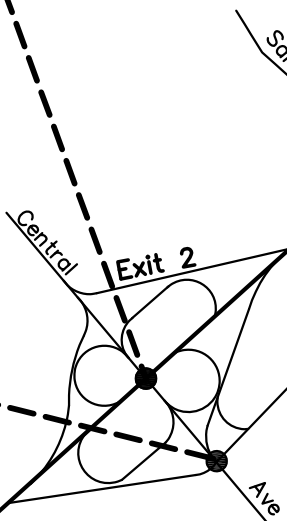
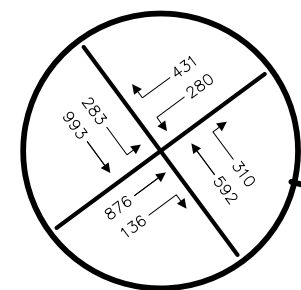
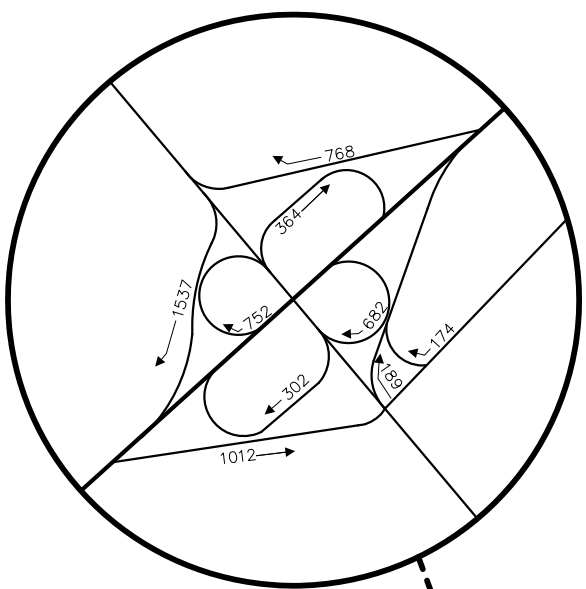
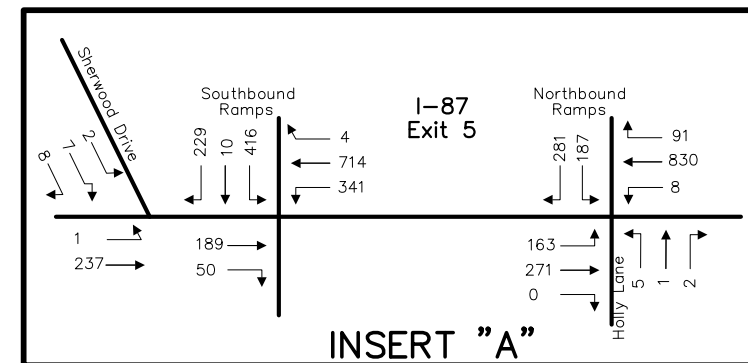
**2016 NO-BUILD
AM PEAK HOUR TRAFFIC VOLUMES**

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE
F-3

DATE: 1/12





NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

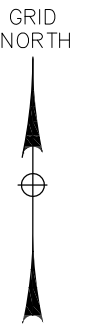
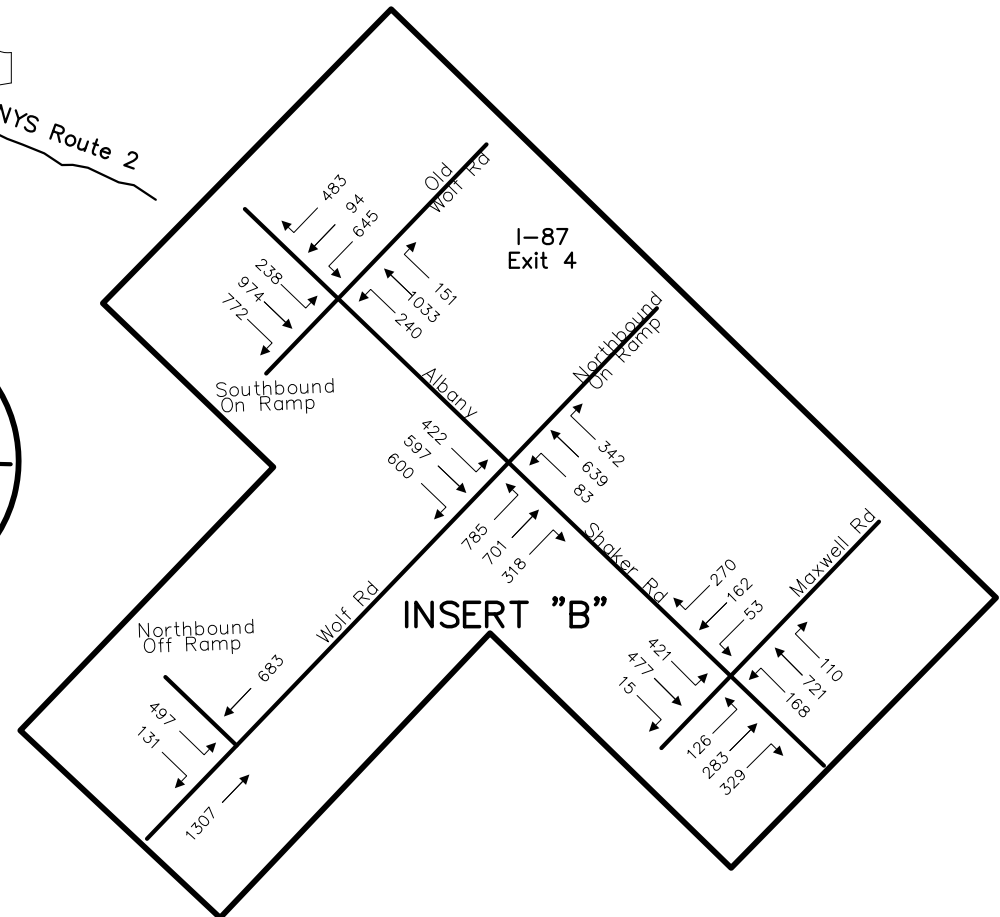
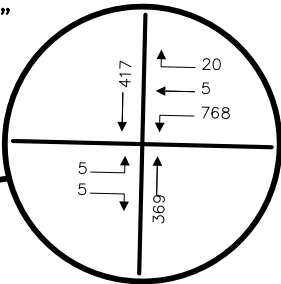
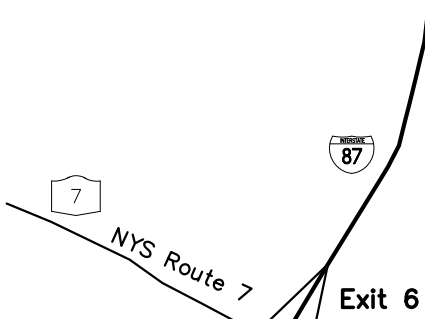
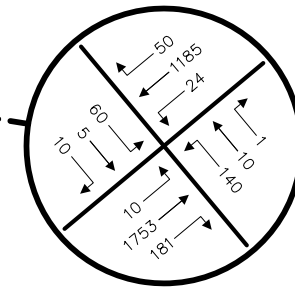
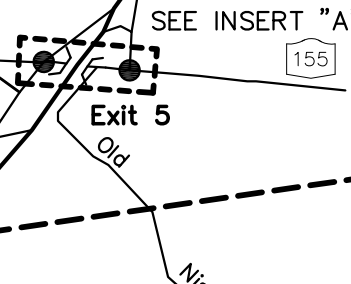
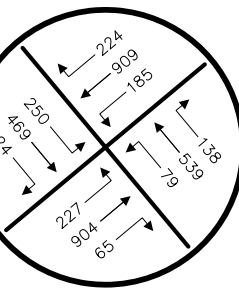
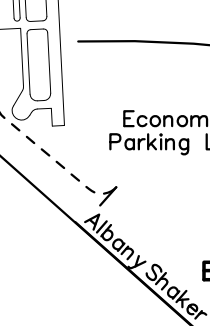
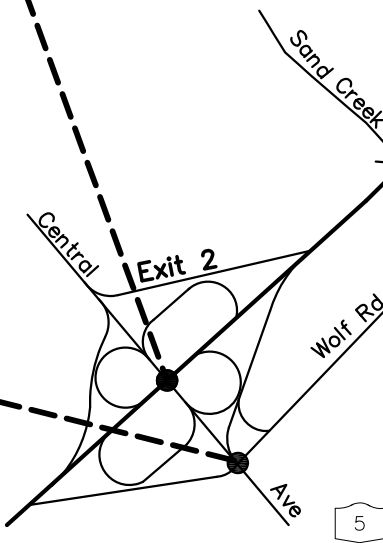
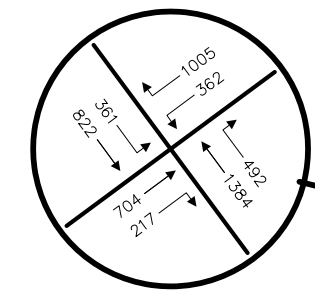
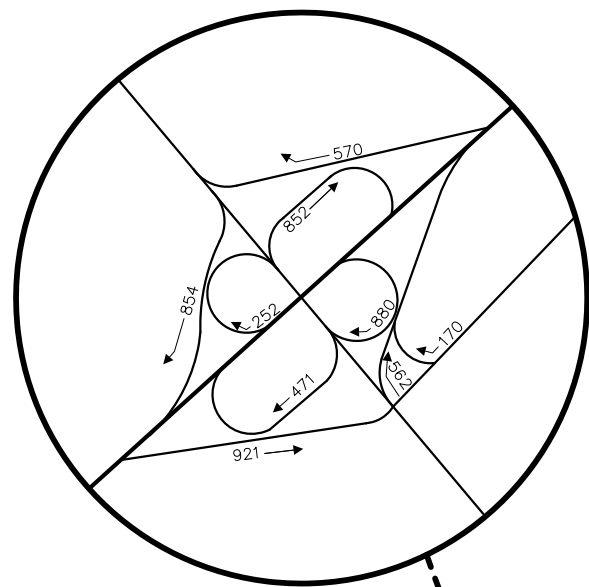
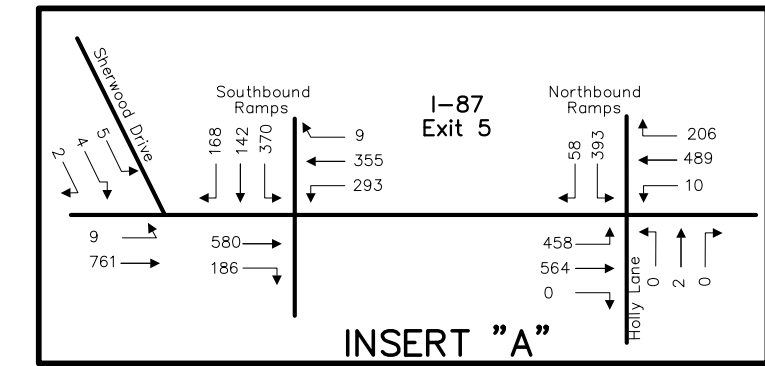
**2026 NO-BUILD
AM PEAK HOUR TRAFFIC VOLUMES**

**INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS**


FIGURE
F-5

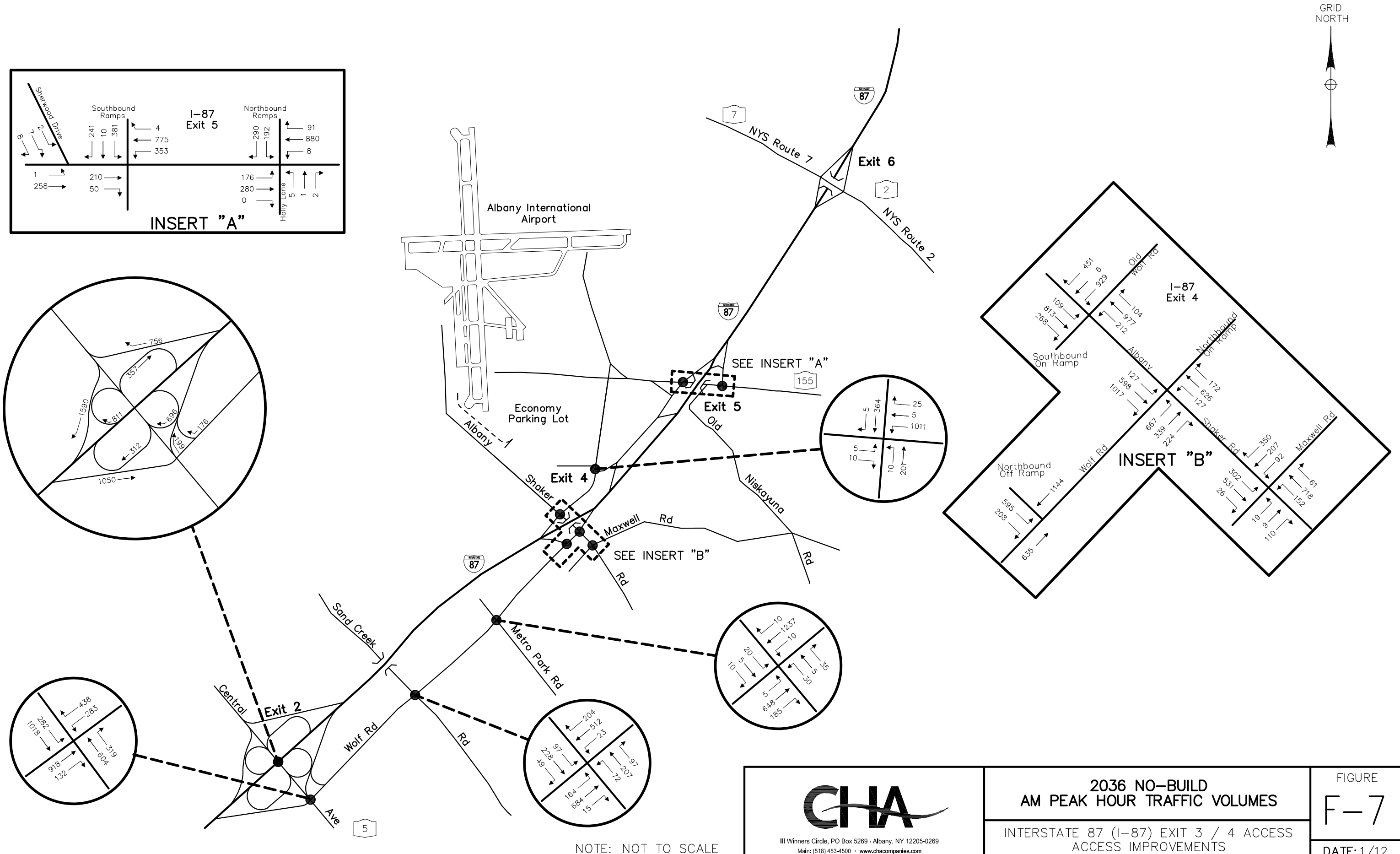
DATE: 1/12

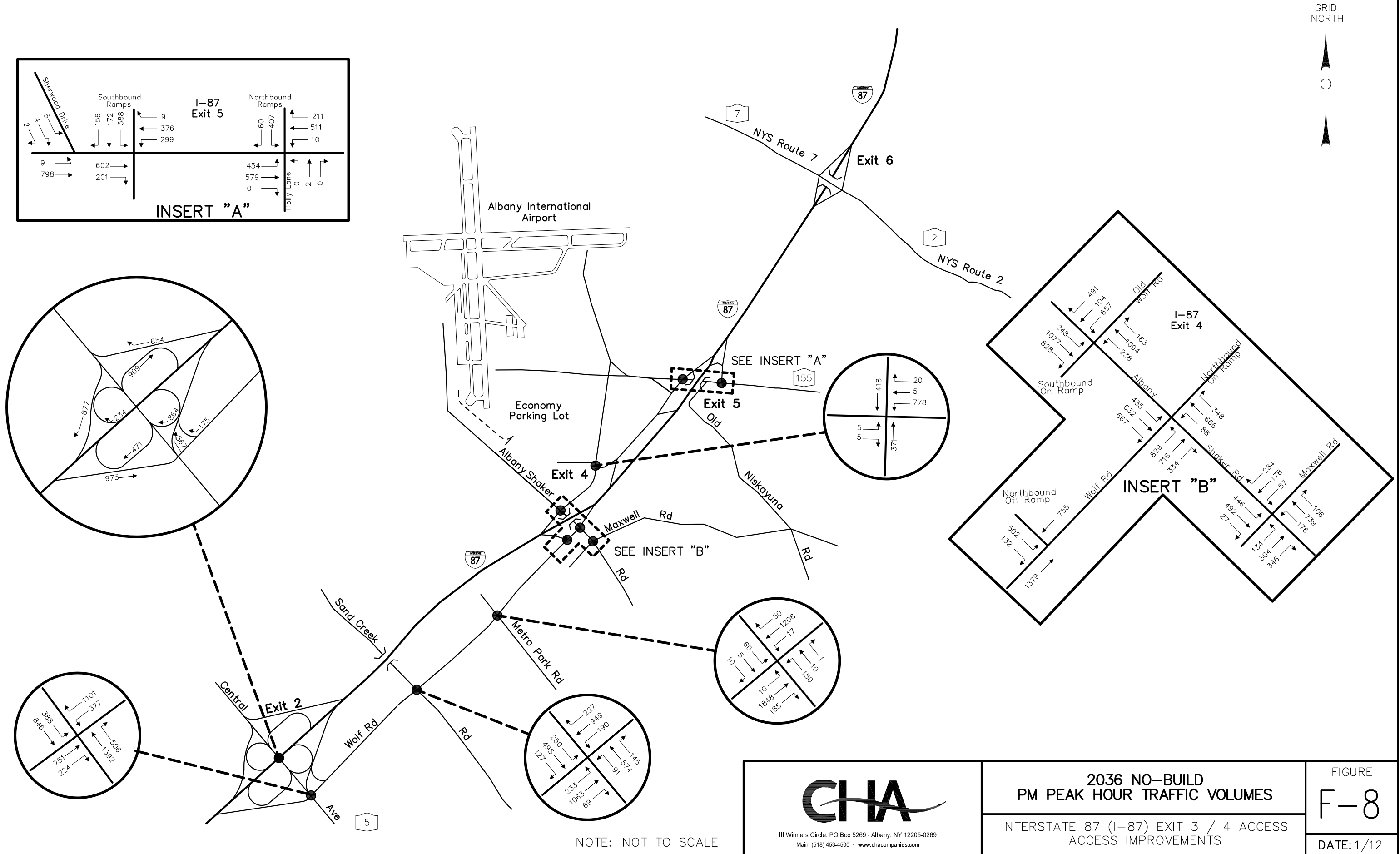
Saved: 12/21/2011 1:45:09 PM Plotted: 1/9/2012 4:44:26 PM User: Kinley, James
FILE: U:\9456\ACAD\31\ACAD\2008-2009 ANALYSIS\DEIS FIGURES 2012\2026 PM NO-BUILD.DWG



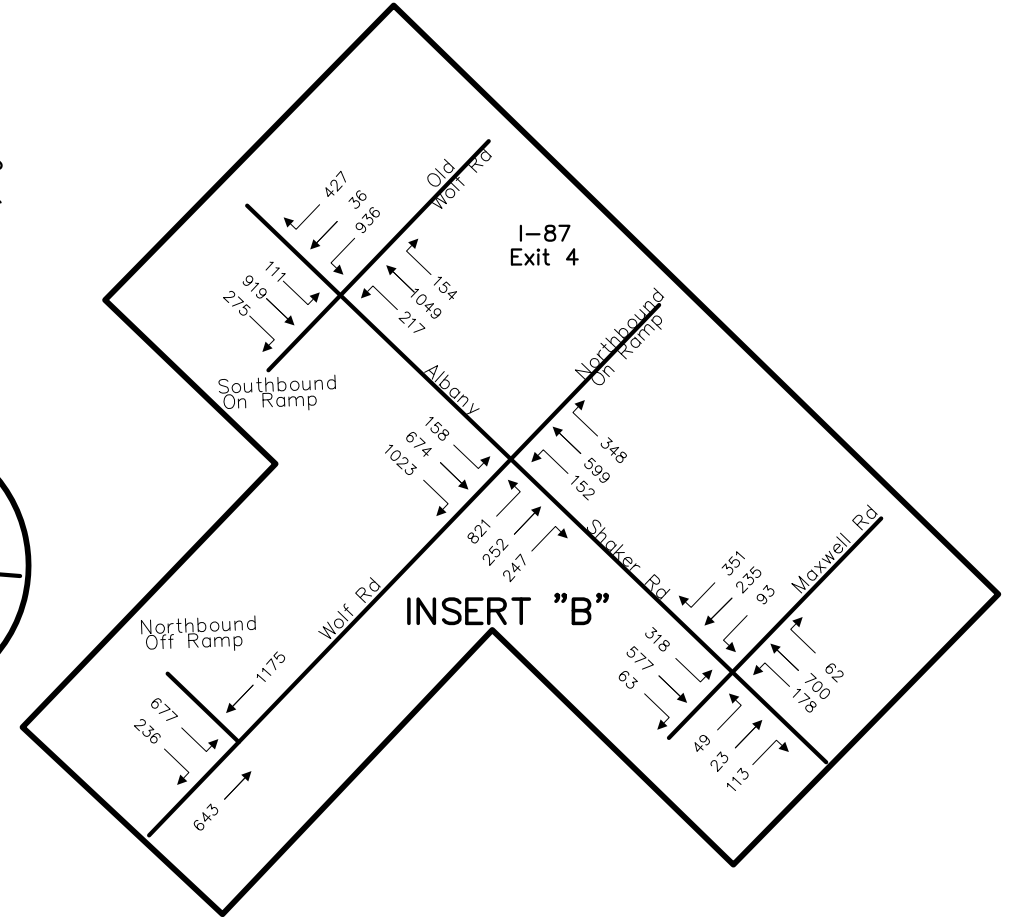
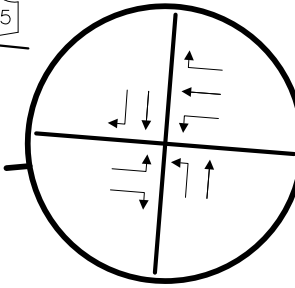
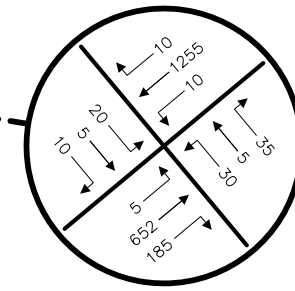
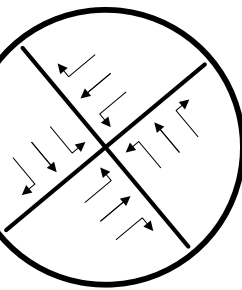
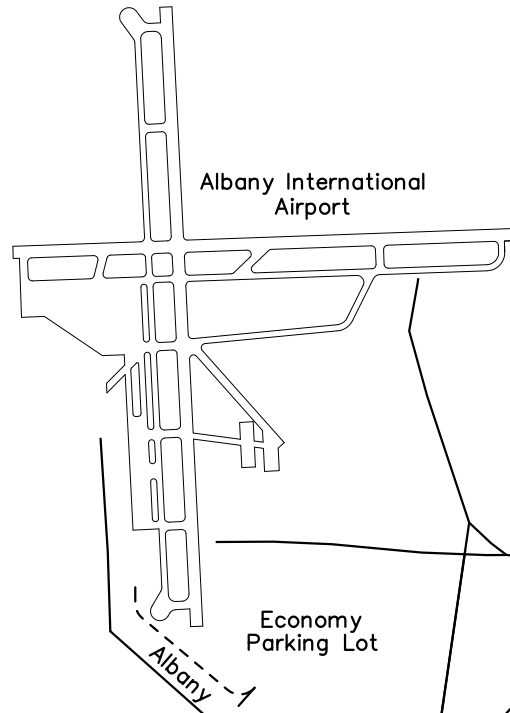
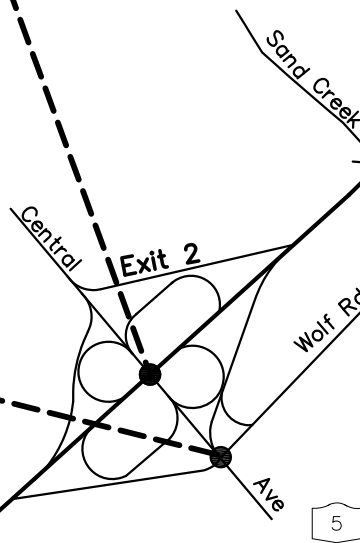
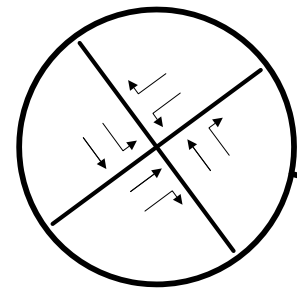
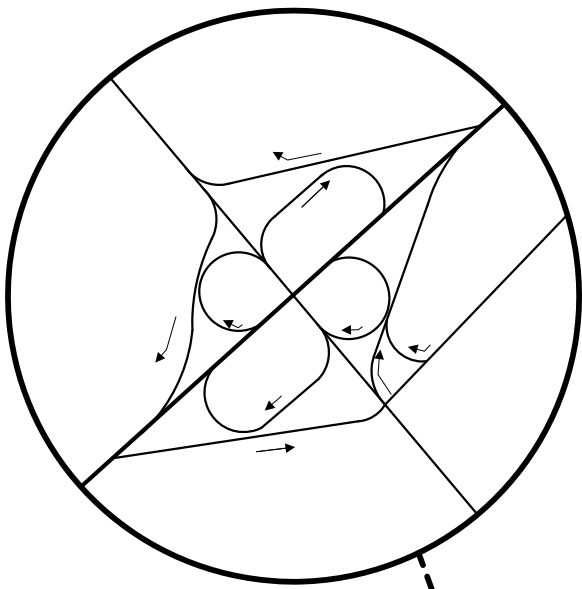
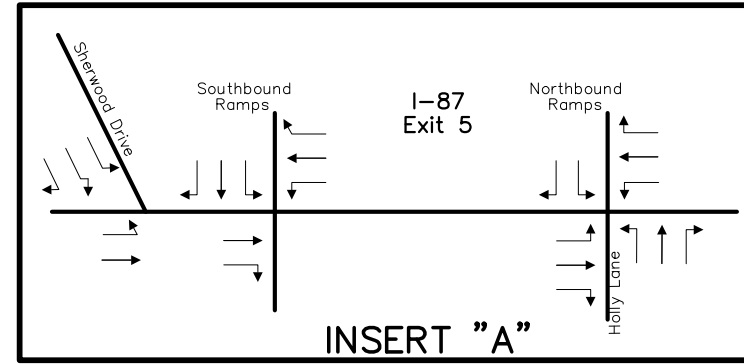
NOTE: NOT TO SCALE

 III Winners Circle, PO Box 5269 - Albany, NY 12205-0269 Main: (518) 453-4500 • www.chacompanies.com	2026 NO-BUILD PM PEAK HOUR TRAFFIC VOLUMES	FIGURE F-6
	INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS ACCESS IMPROVEMENTS	
		DATE: 1/12





Saved: 12/21/2011 1:53:08 PM Plotted: 1/9/2012 5:05:49 PM User: Kinley, James
FILE: U:\9456\ACAD\31\ACAD\2008-2009 ANALYSIS\DEIS FIGURES 2012\2046 AM NO-BUILD.DWG



NOTE: NOT TO SCALE



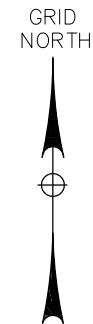
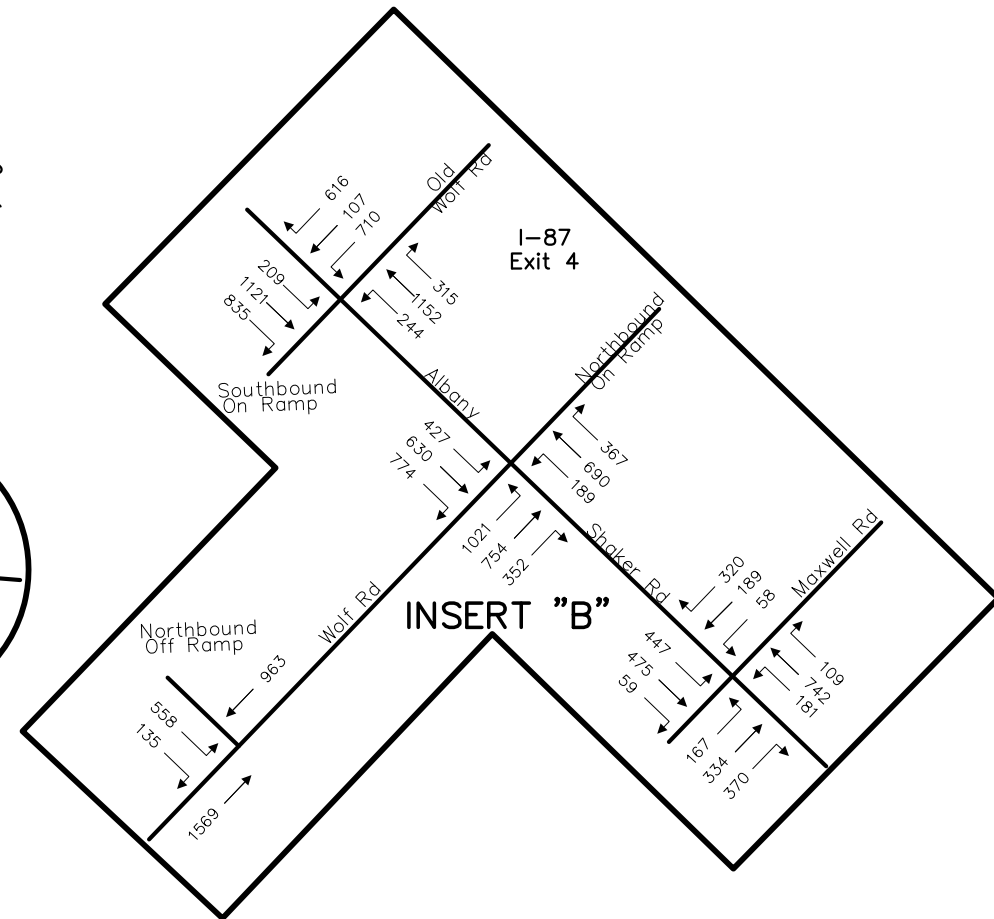
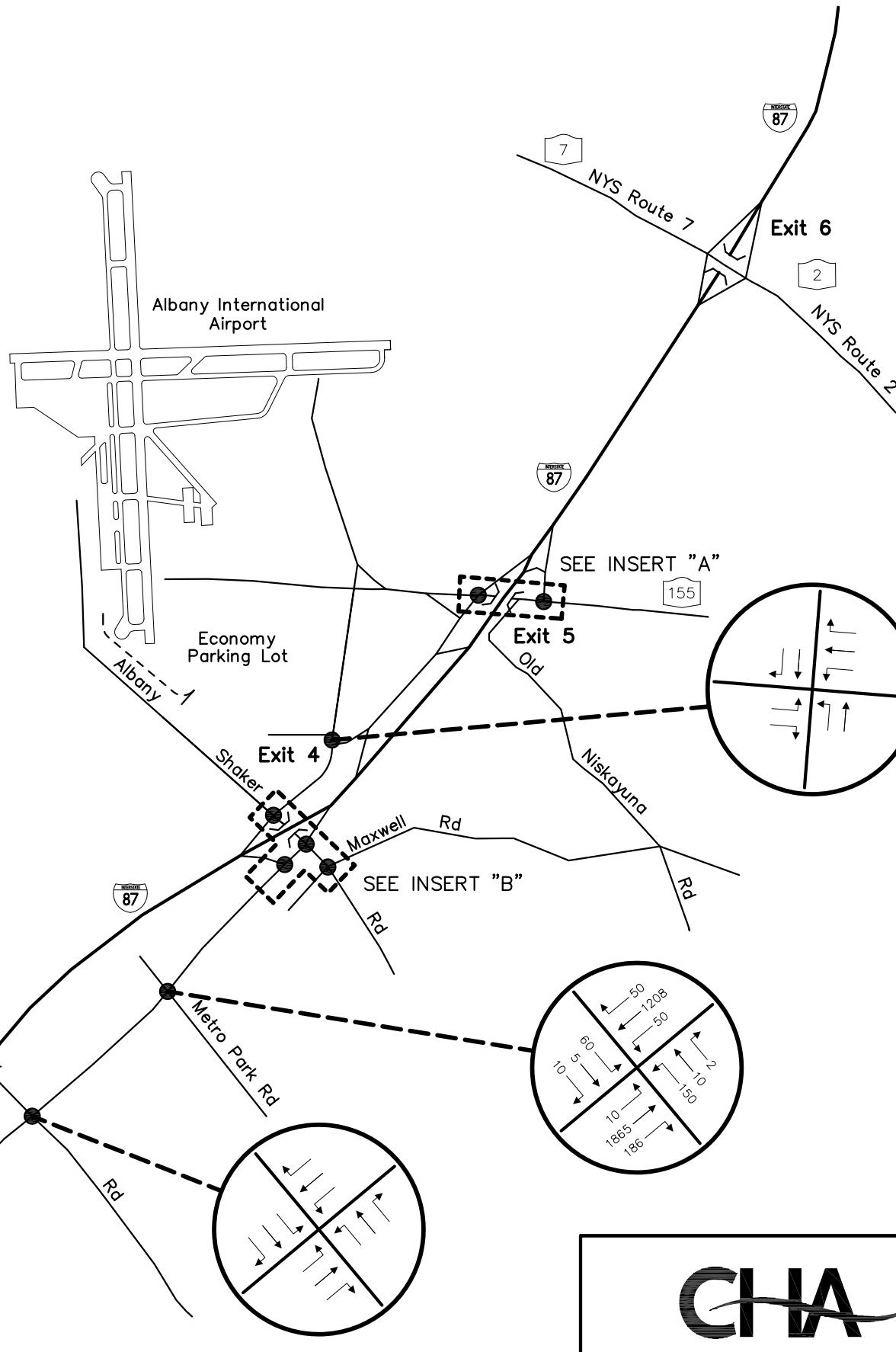
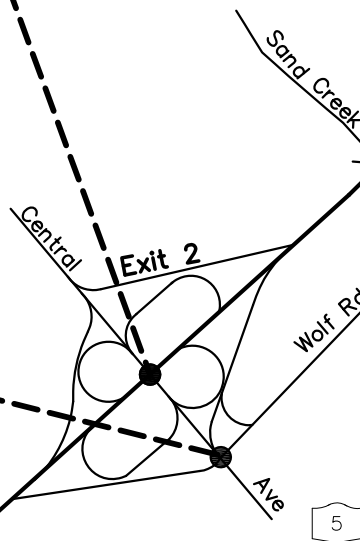
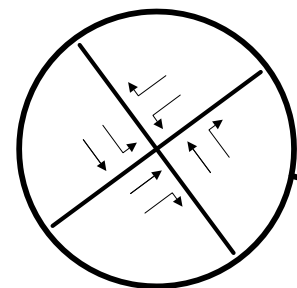
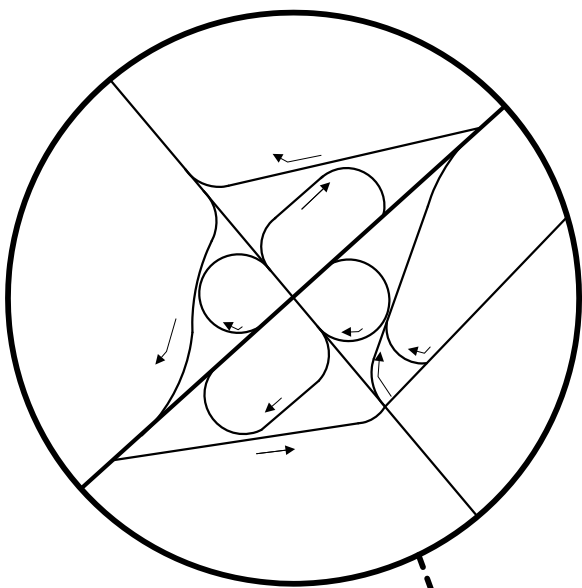
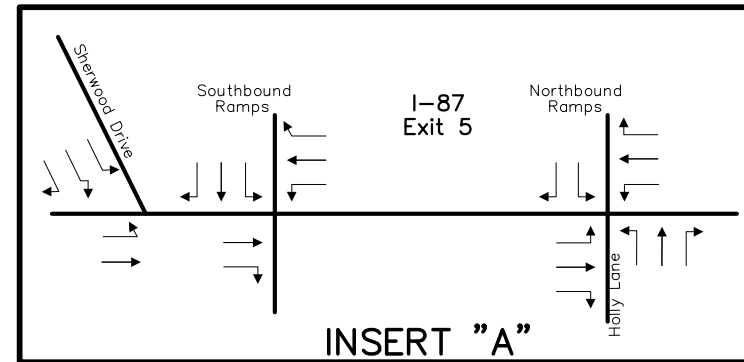
III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

2046 NO-BUILD
AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE
F-9

DATE: 1/12



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

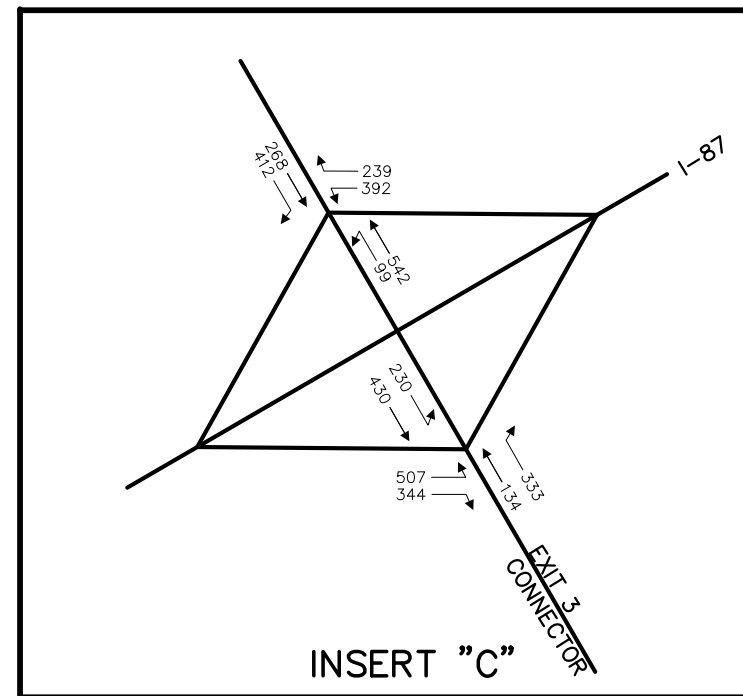
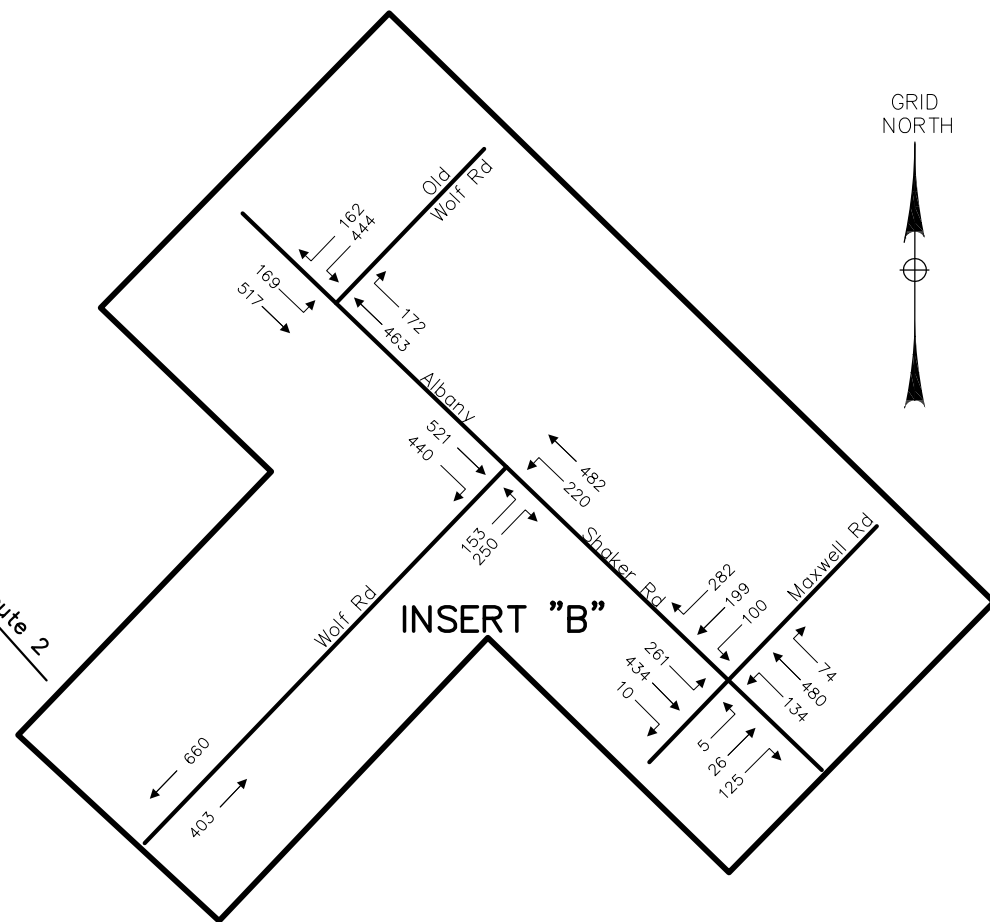
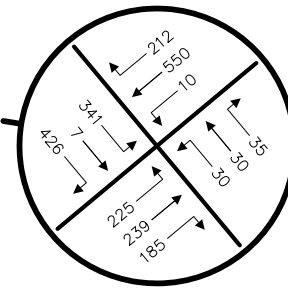
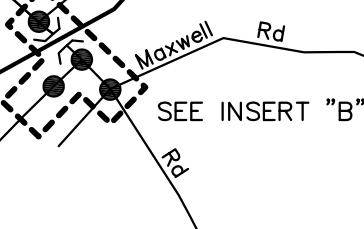
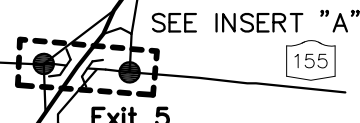
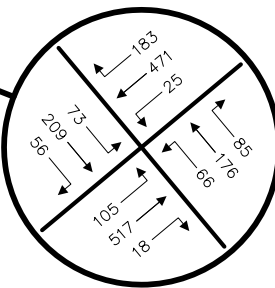
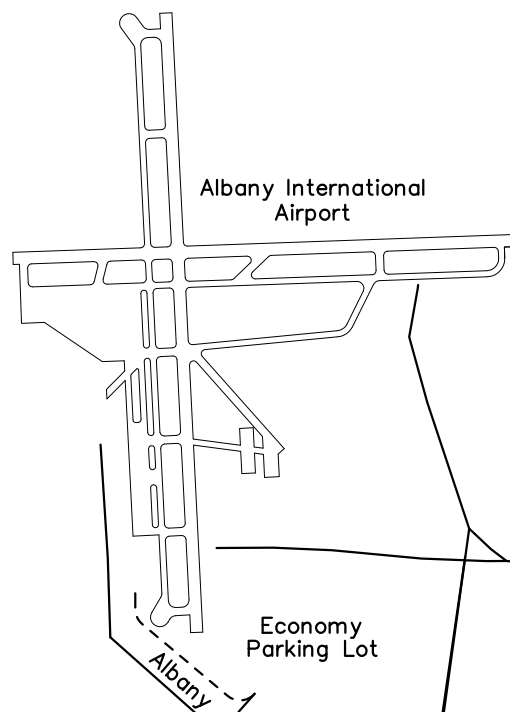
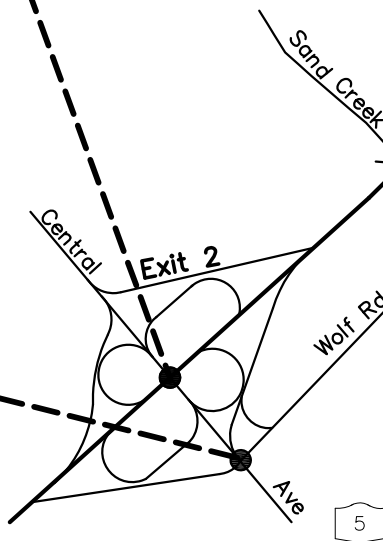
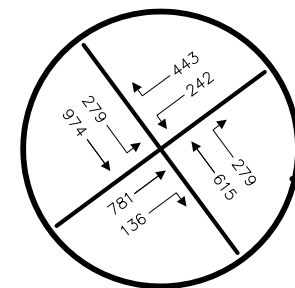
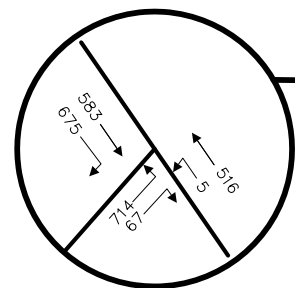
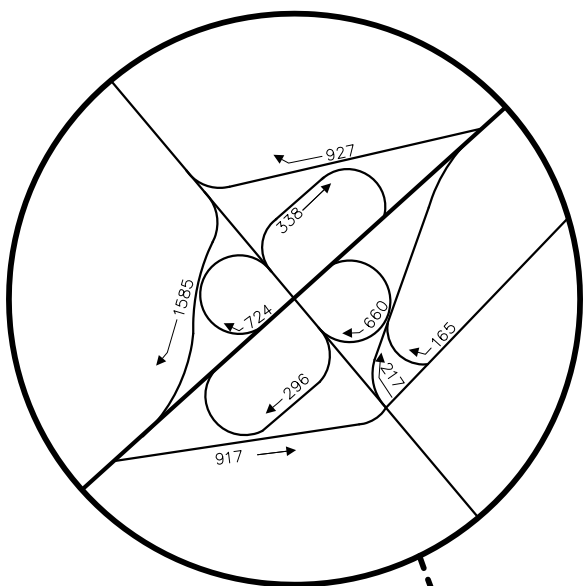
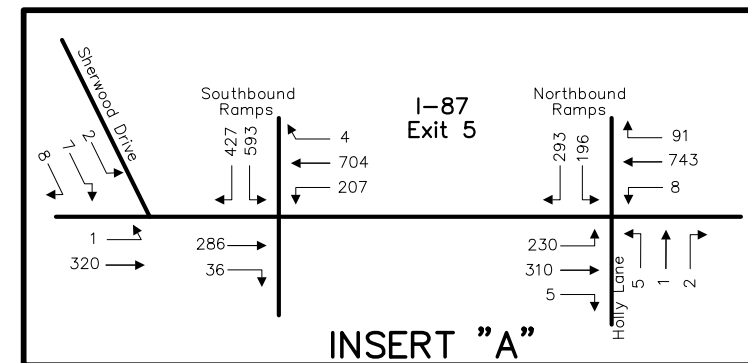
2046 NO-BUILD
PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE

F-10

DATE: 1/12



NOTE: NOT TO SCALE

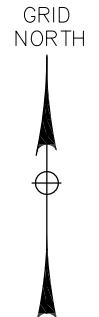
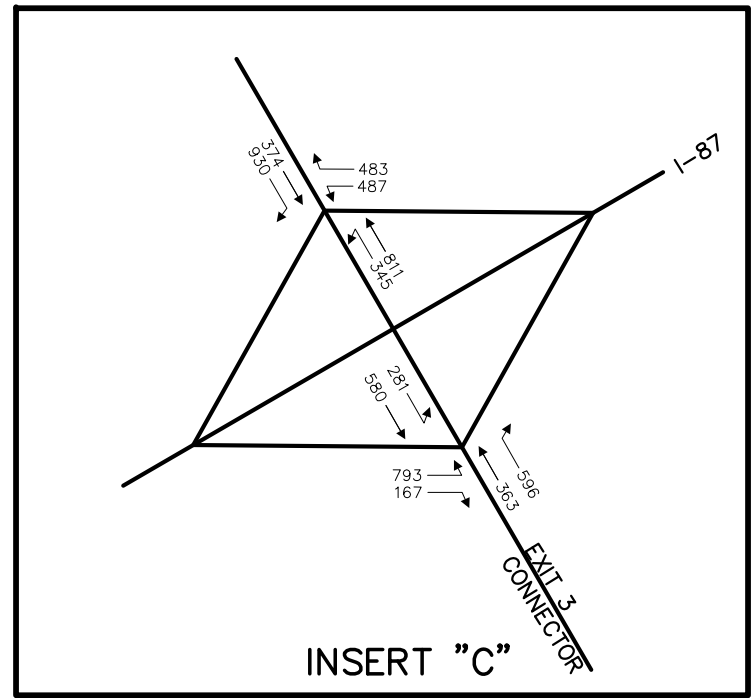
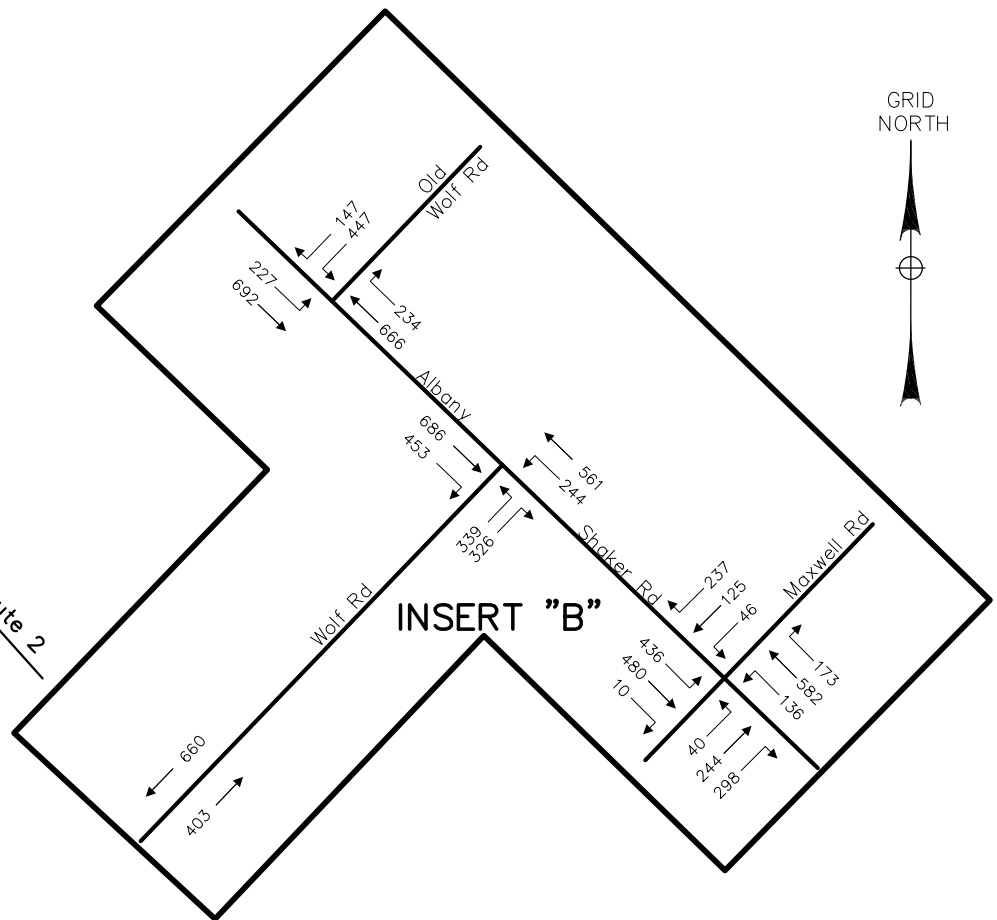
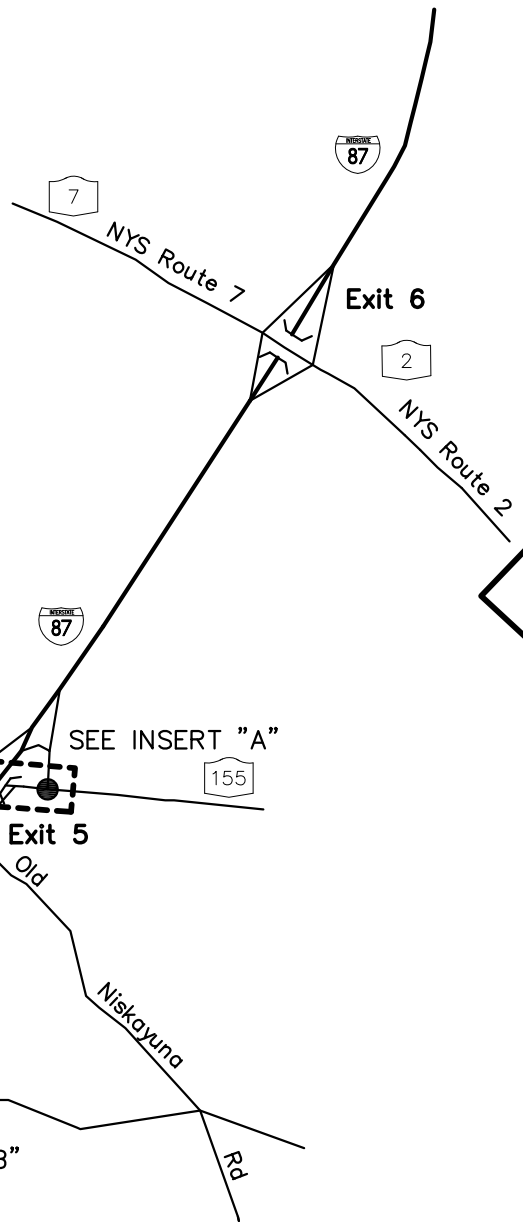
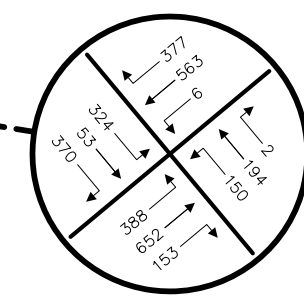
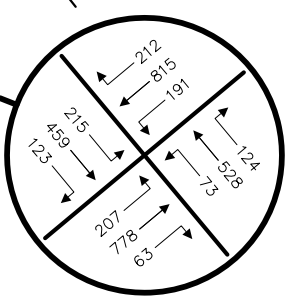
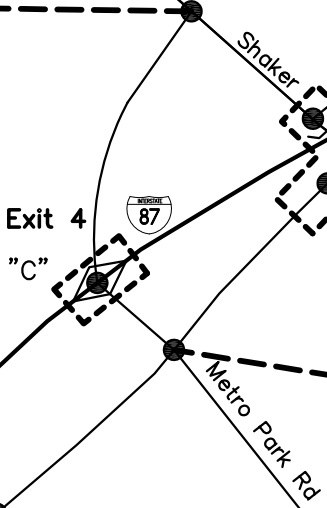
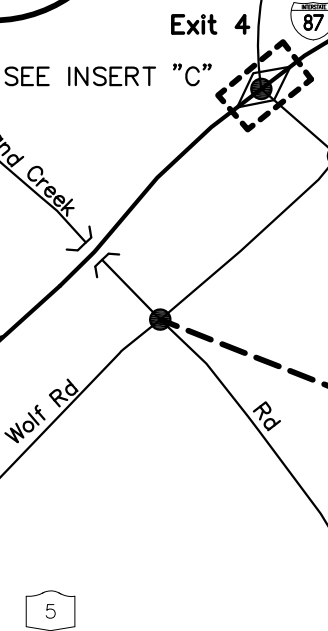
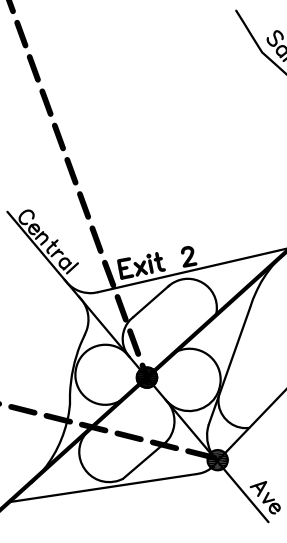
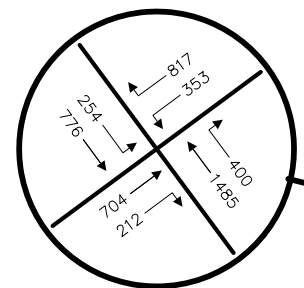
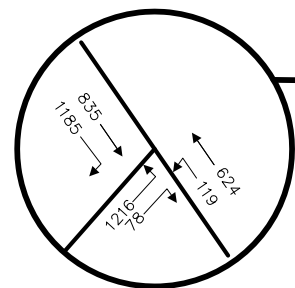
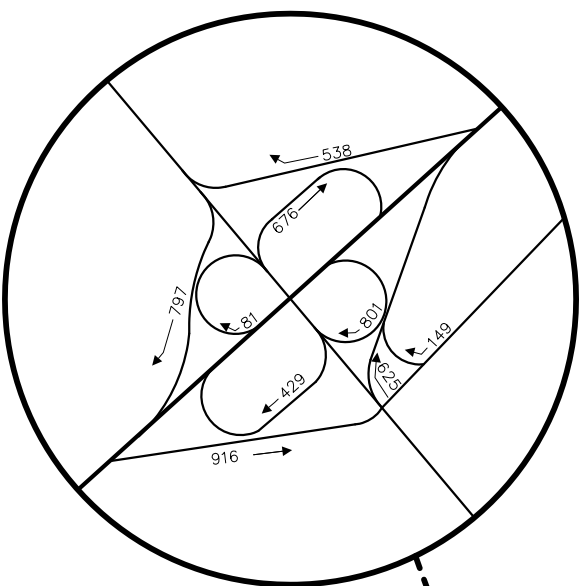
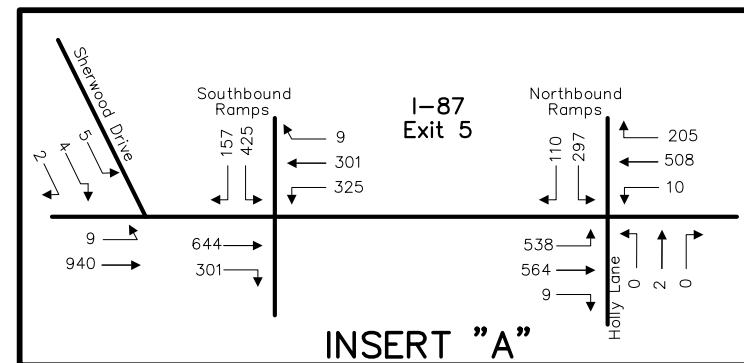


III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2016 DIAMOND ALTERNATIVE
AM PEAK HOUR TRAFFIC VOLUMES**

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS





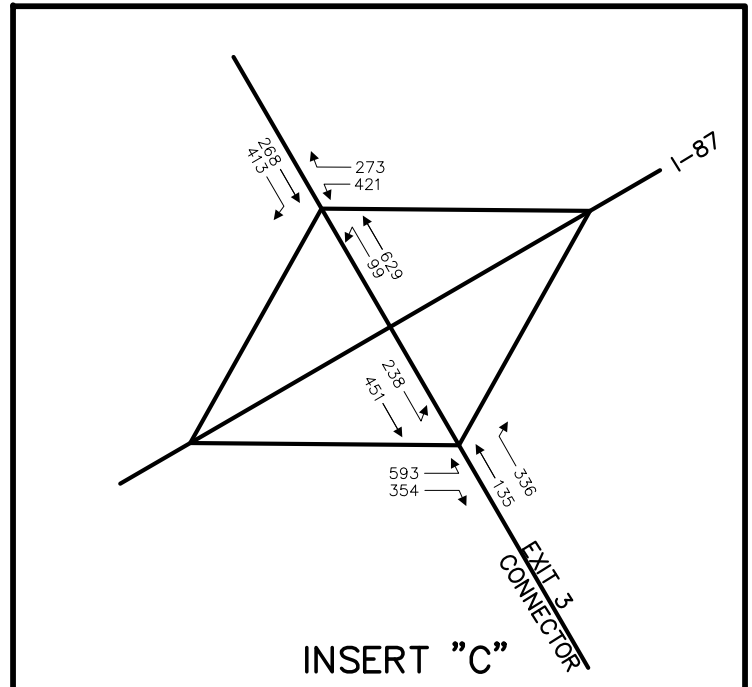
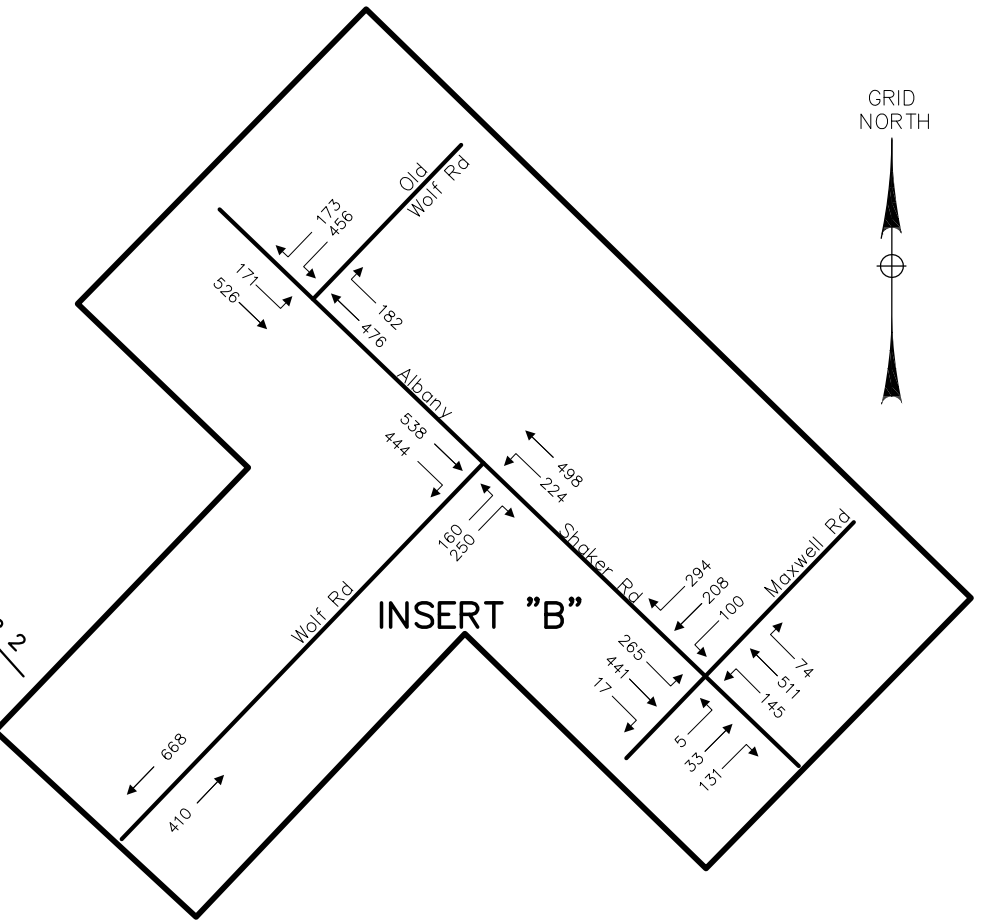
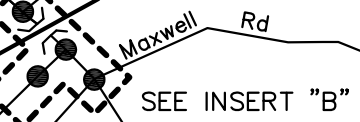
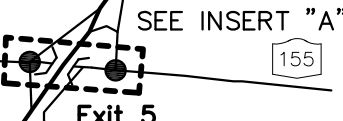
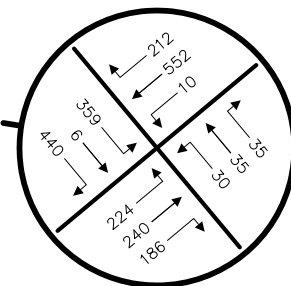
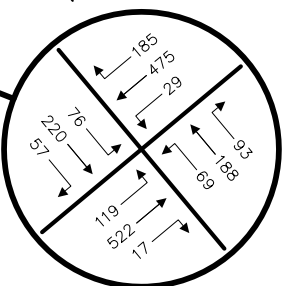
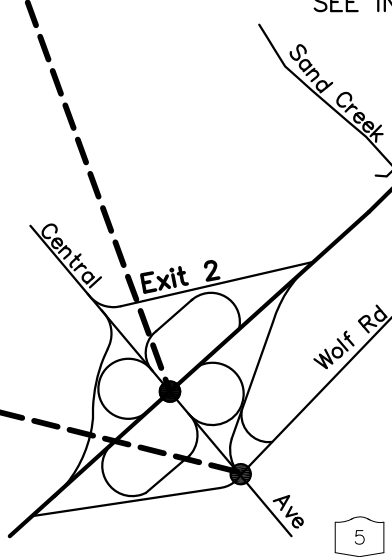
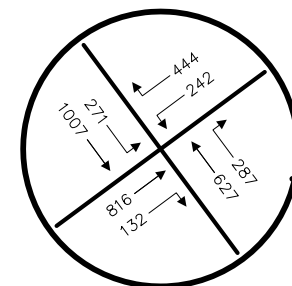
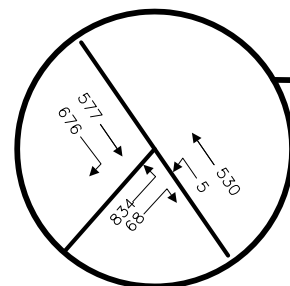
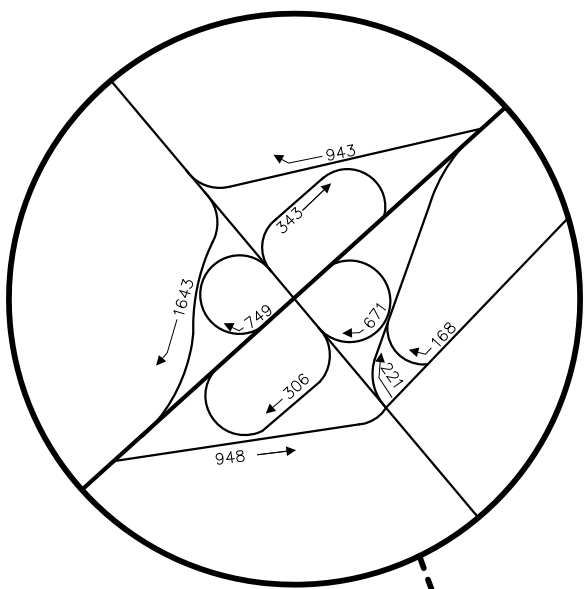
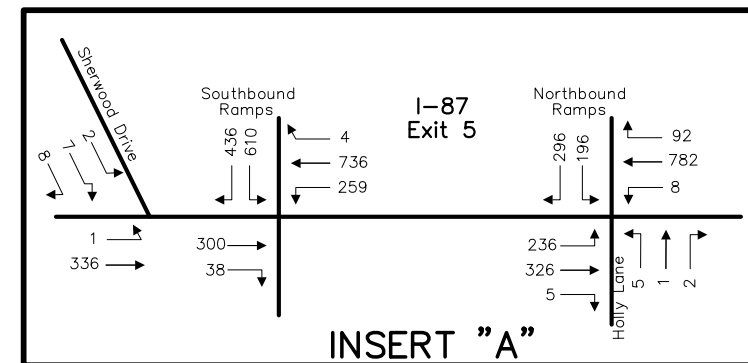
NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2016 DIAMOND ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES**

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS



NOTE: NOT TO SCALE

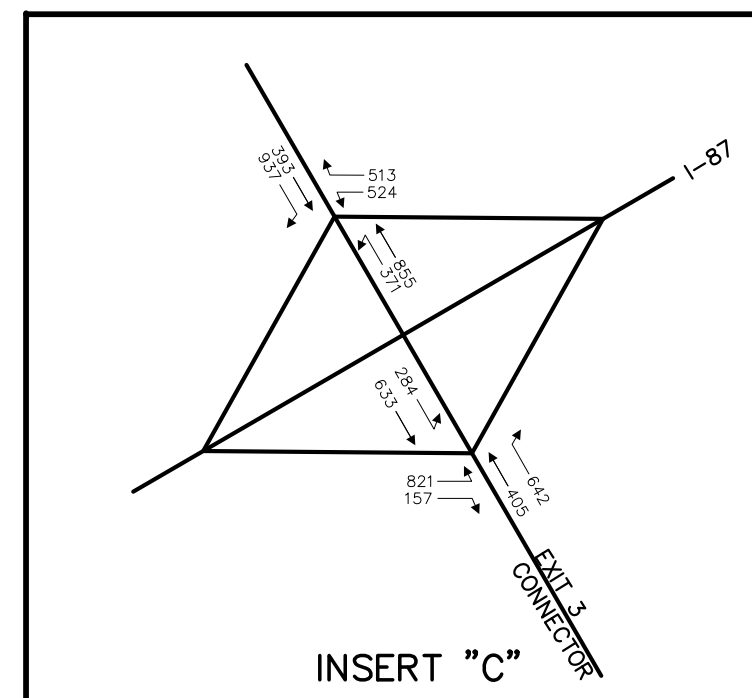
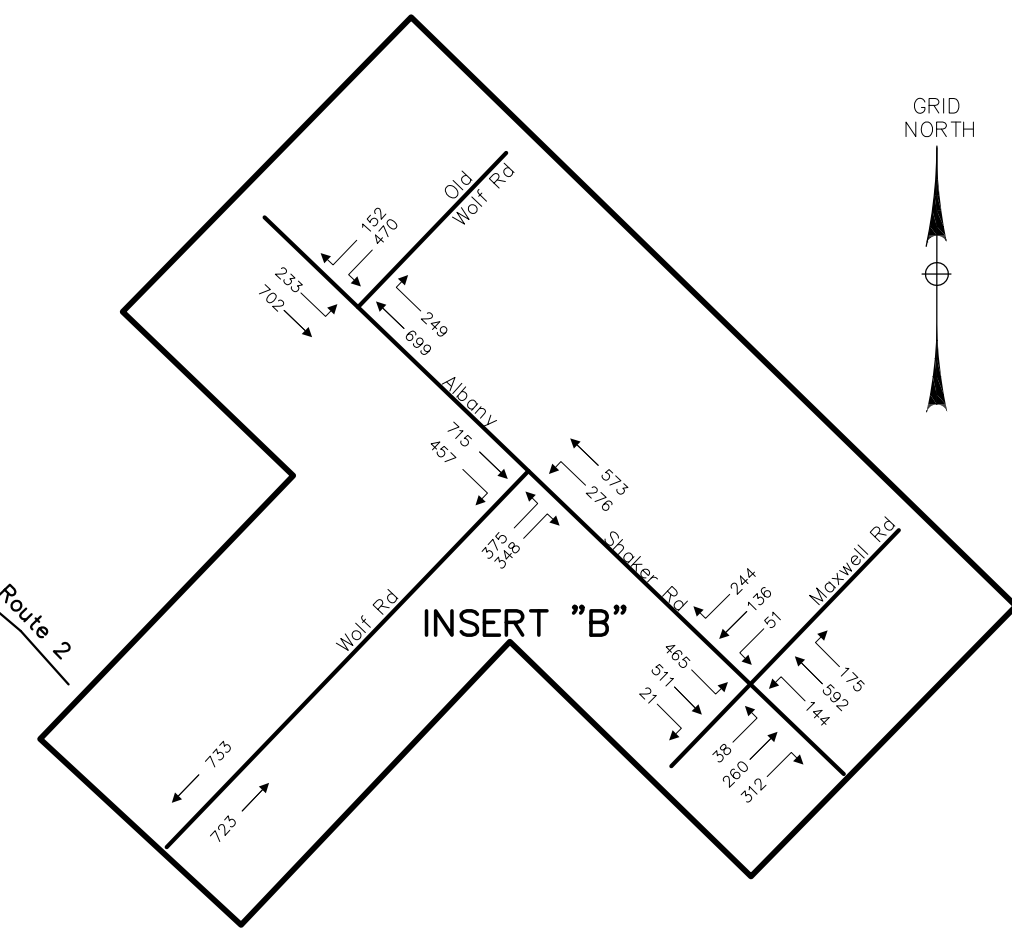
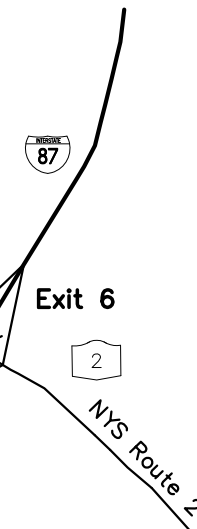
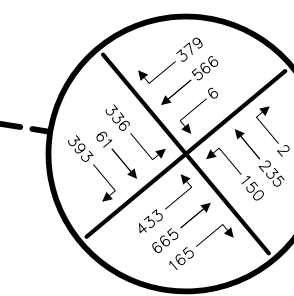
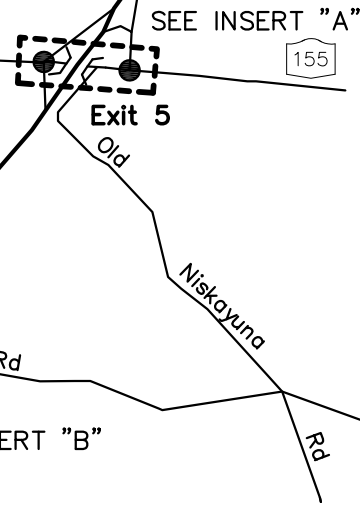
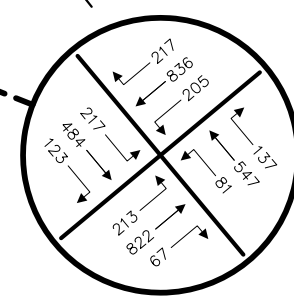
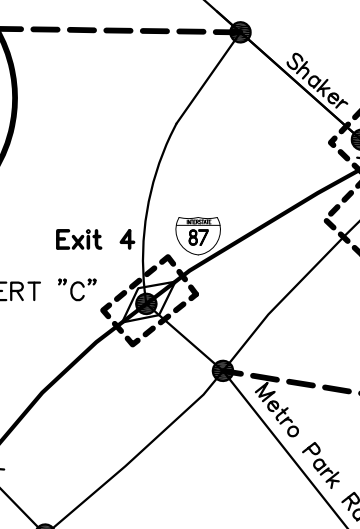
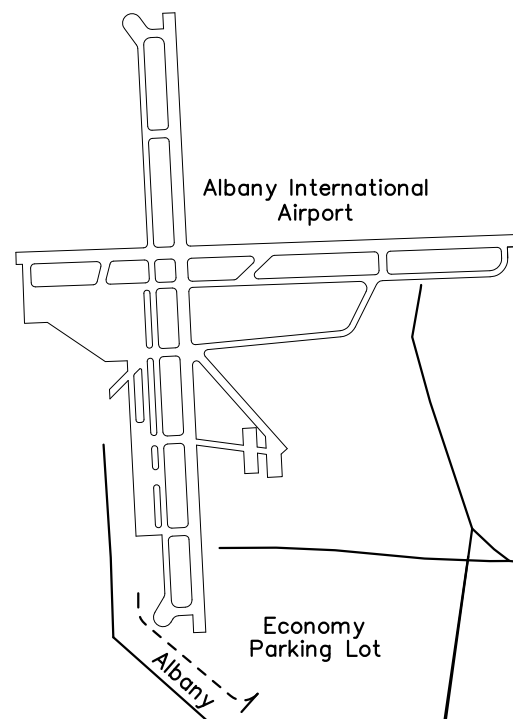
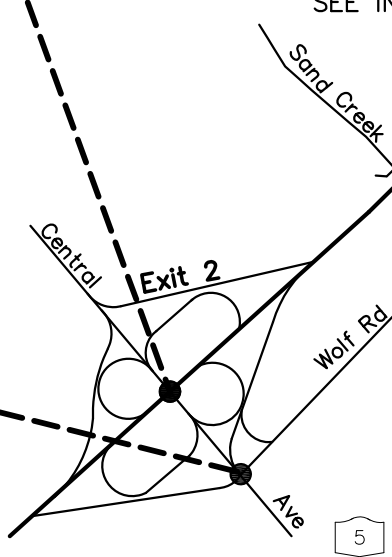
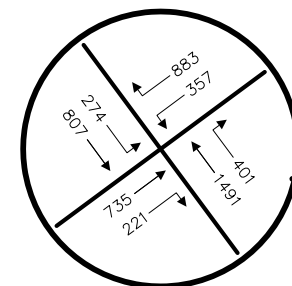
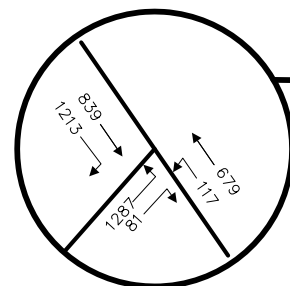
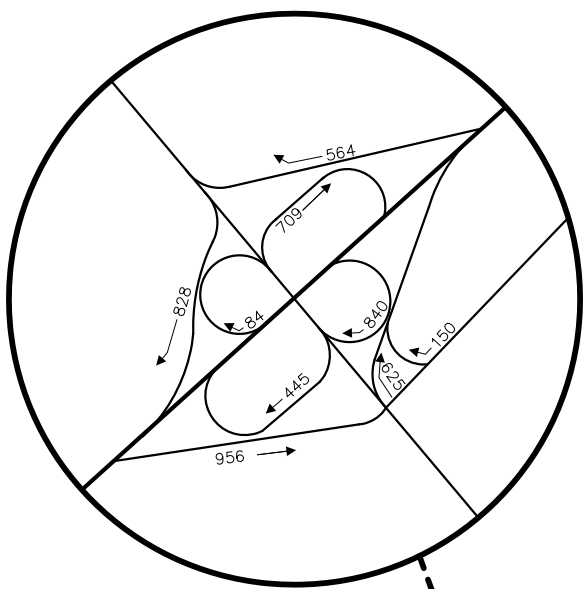
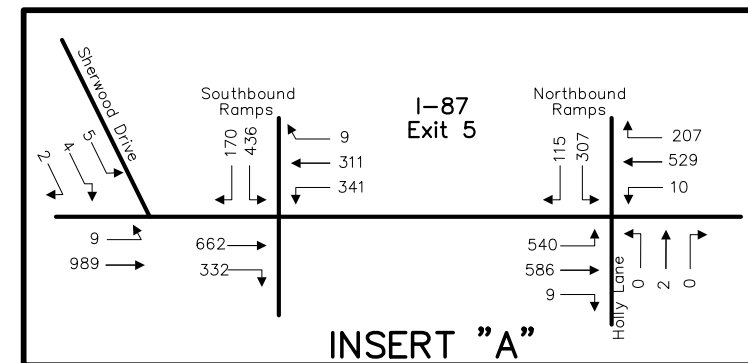


III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2026 DIAMOND ALTERNATIVE
AM PEAK HOUR TRAFFIC VOLUMES**

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

Saved: 1/9/2012 5:16:15 PM Plotted: 12/31/2012 9:32:55 AM User: Kinley, James
FILE: U:\9456\ACAD\31\ACAD\2008-2009 ANALYSIS\DEIS FIGURES 2012\2026 PM DIAMOND.DWG



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2026 DIAMOND ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES**

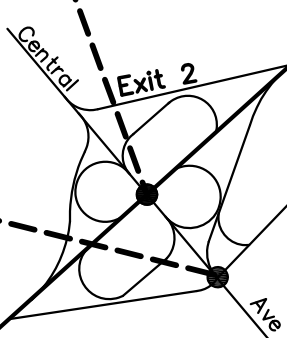
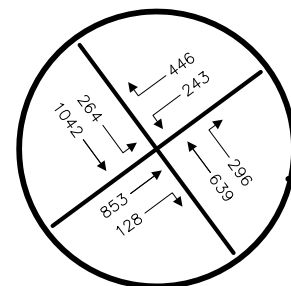
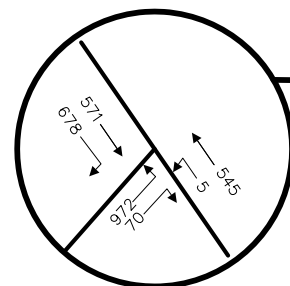
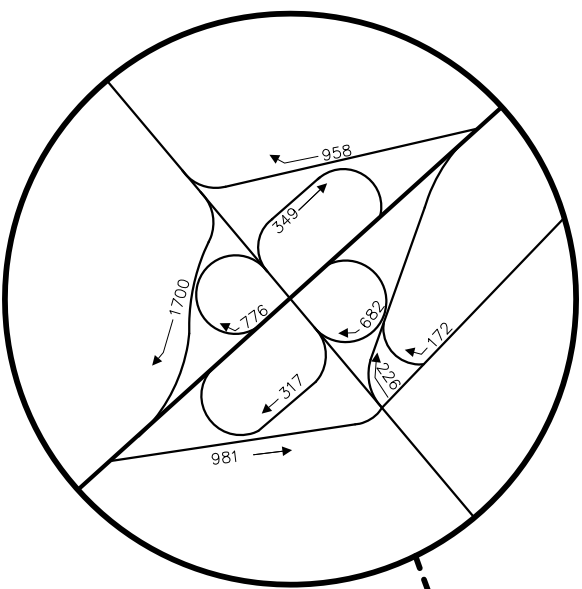
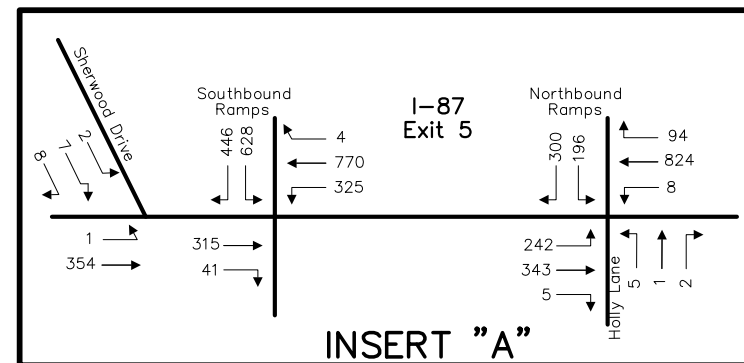
INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE

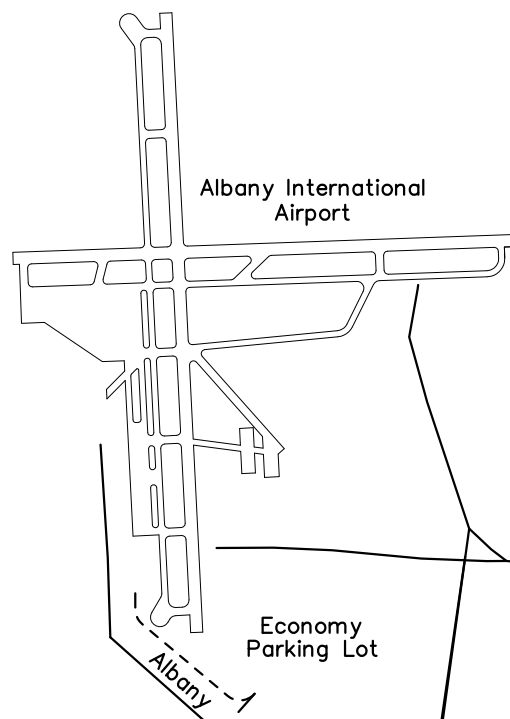
F-24

DATE:12/12





5



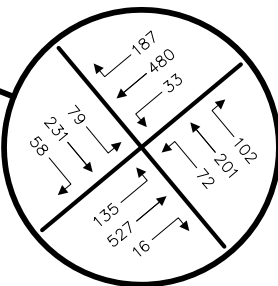
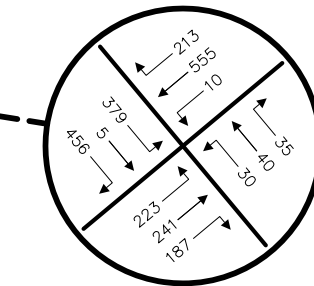
Exit 4

SEE INSERT "C"

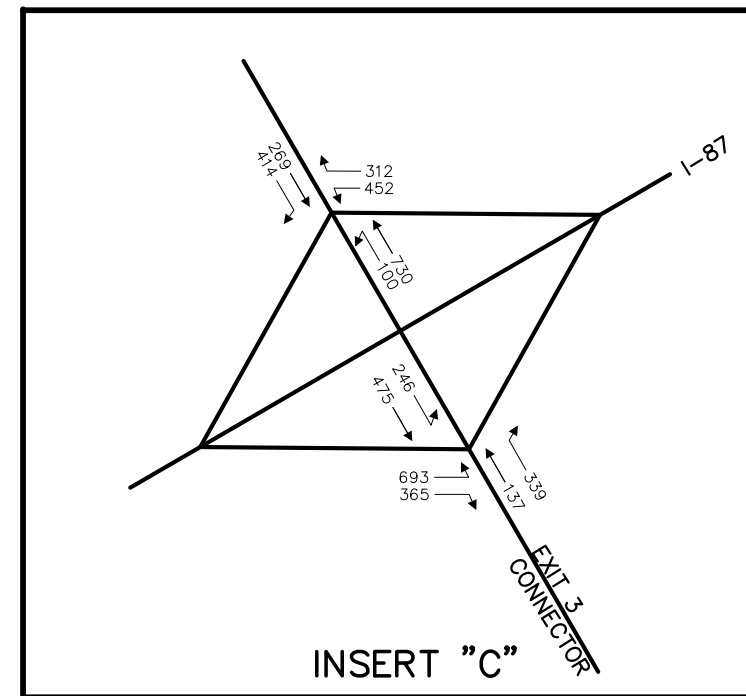
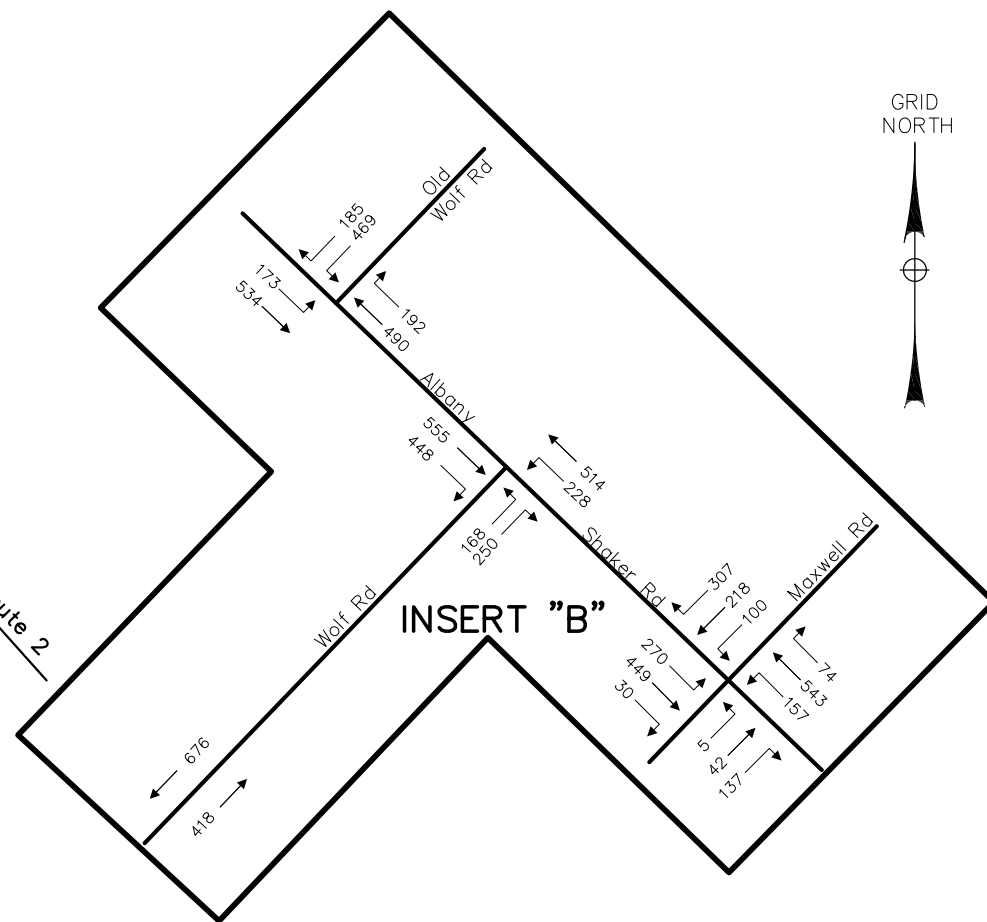
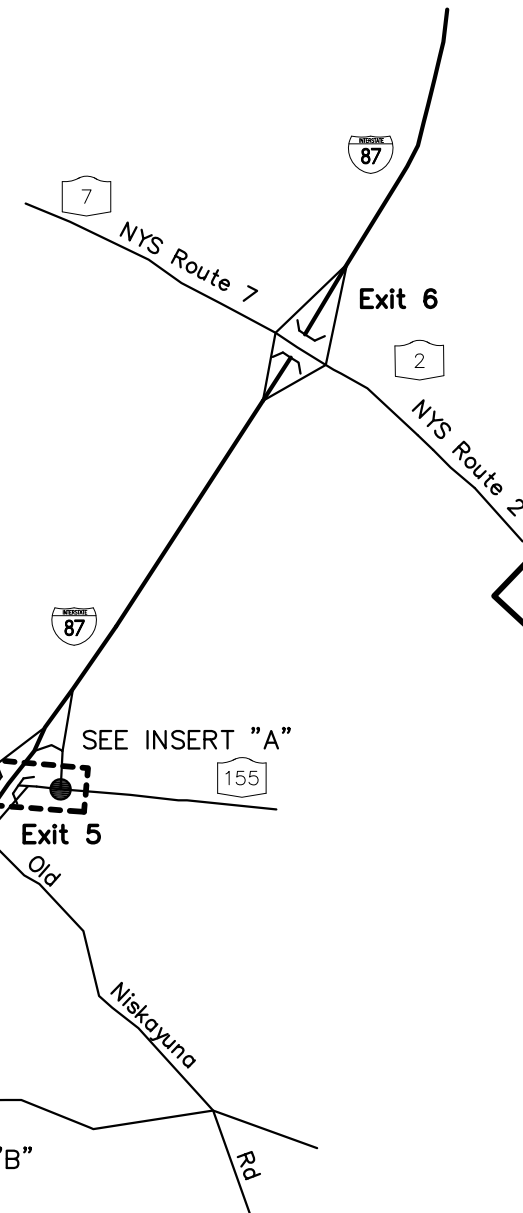
Sand Creek

Exit 5

SEE INSERT "A"



NOTE: NOT TO SCALE



GRID NORTH



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

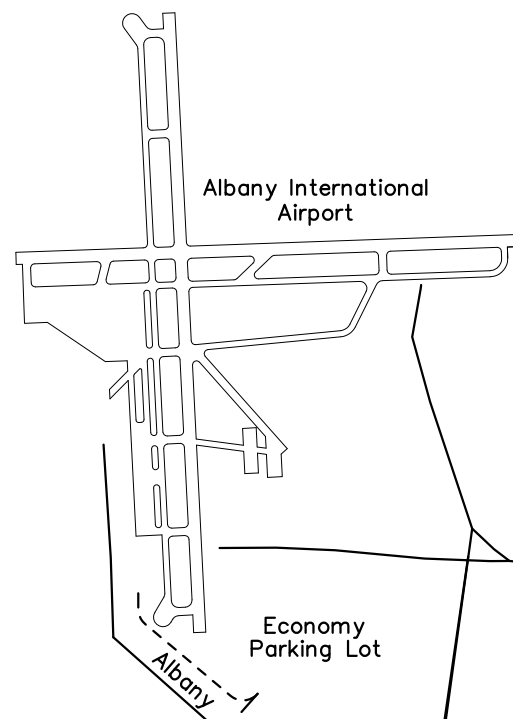
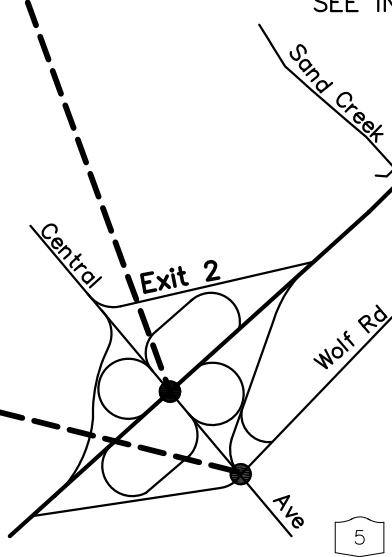
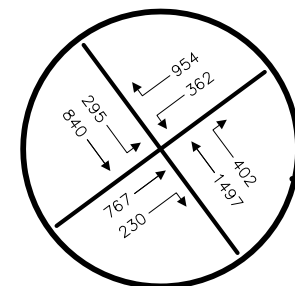
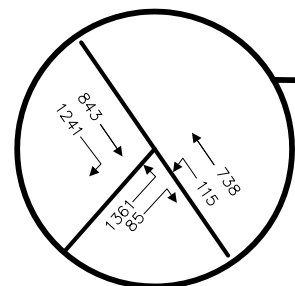
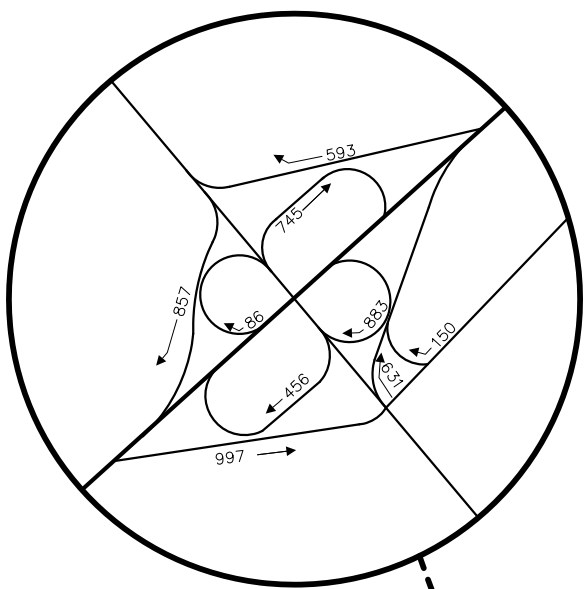
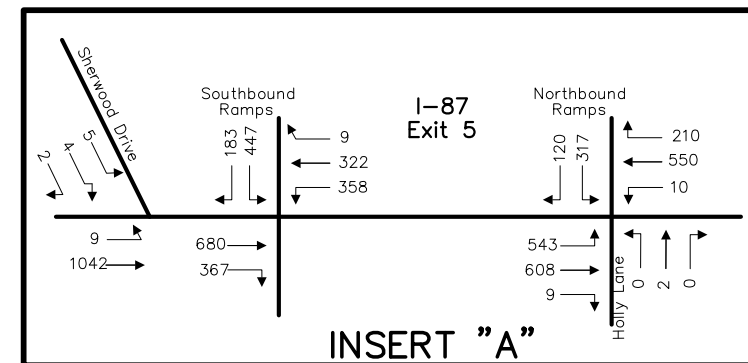
**2036 DIAMOND ALTERNATIVE
AM PEAK HOUR TRAFFIC VOLUMES**

**INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS**

FIGURE

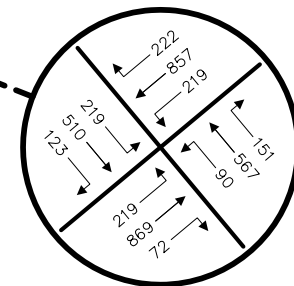
F-25

DATE:12/12



Exit 4

SEE INSERT "C"

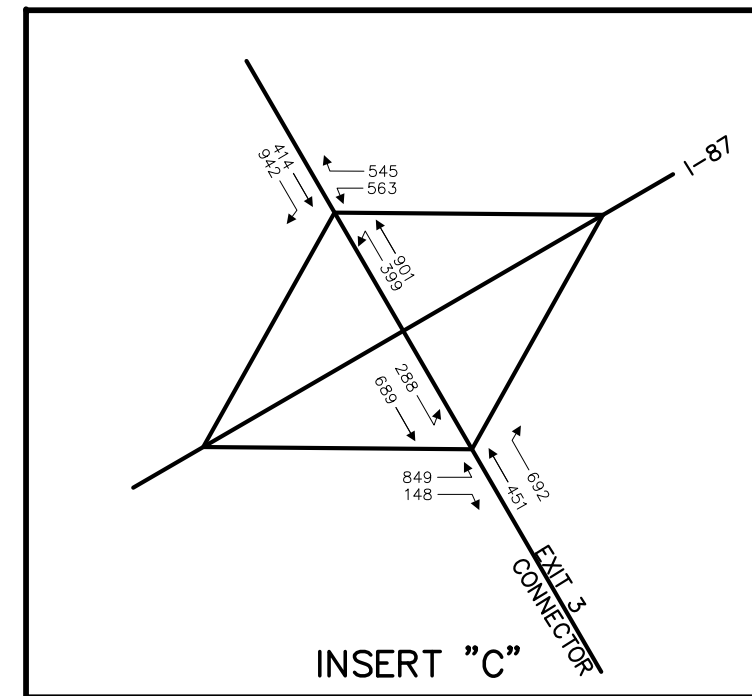
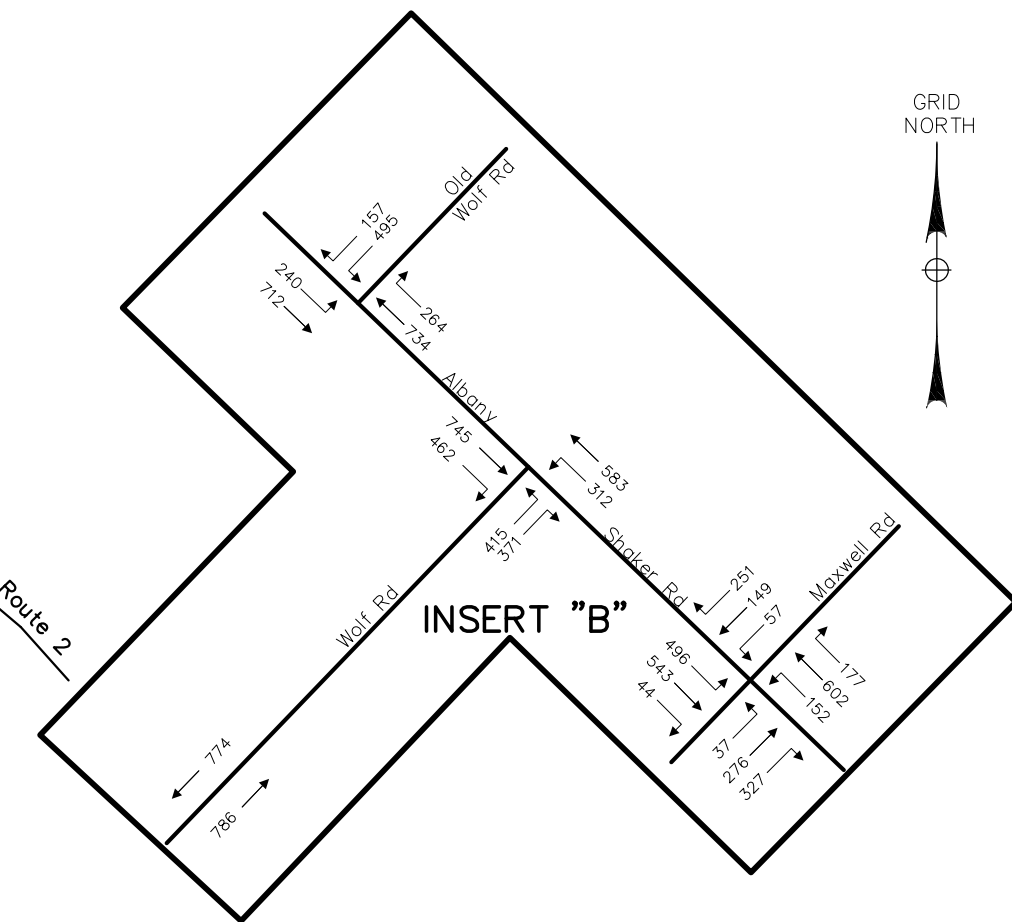
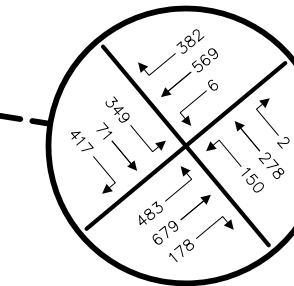


NOTE: NOT TO SCALE

SEE INSERT "A"

Exit 5

Exit 6



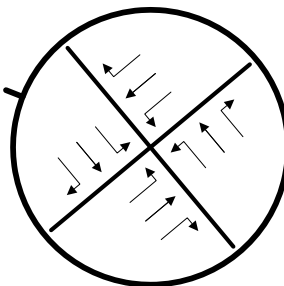
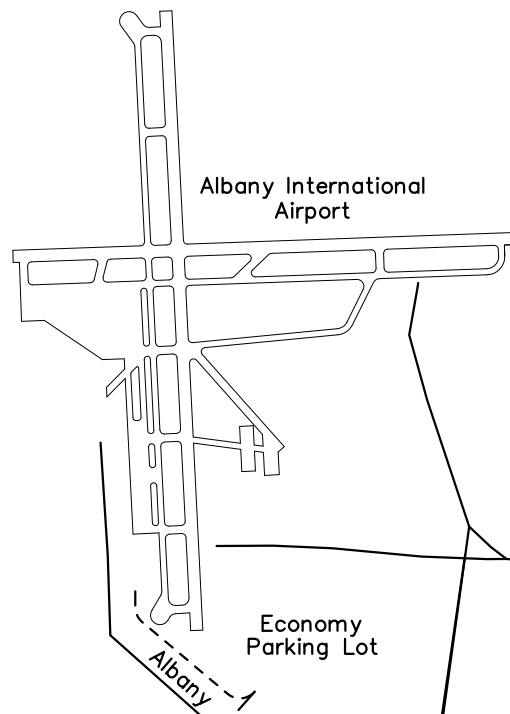
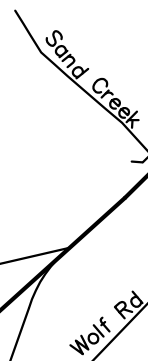
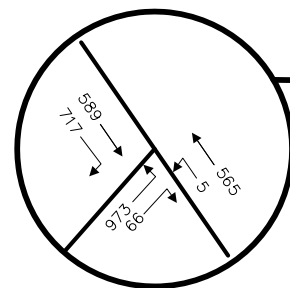
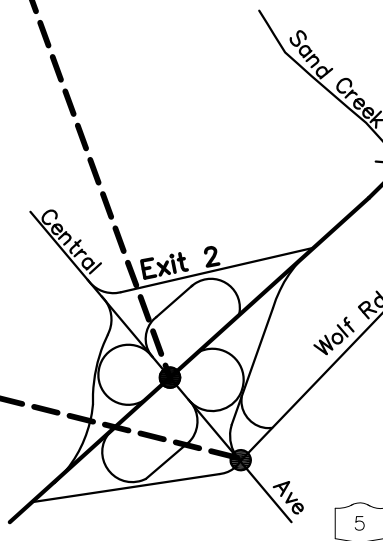
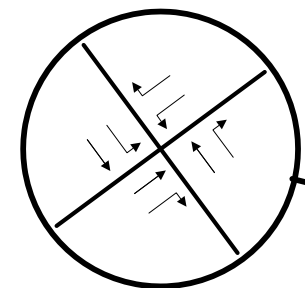
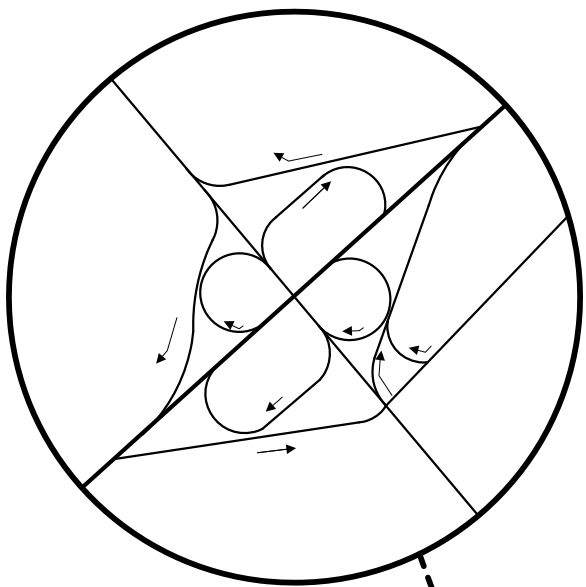
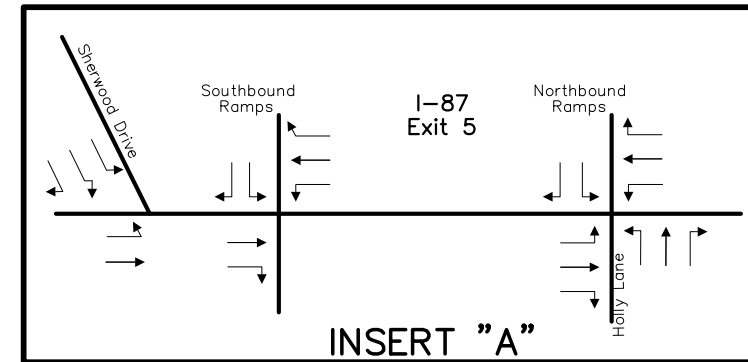
III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2036 DIAMOND ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES**

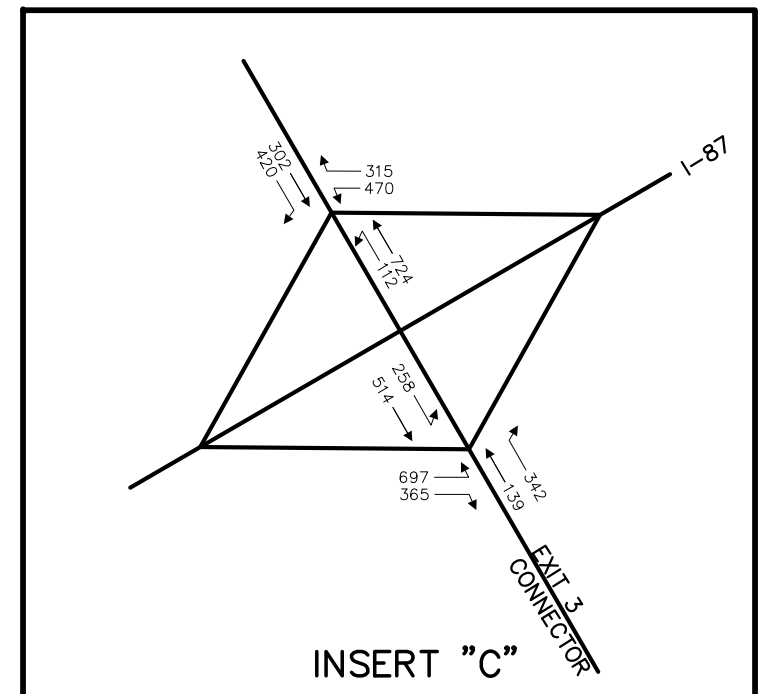
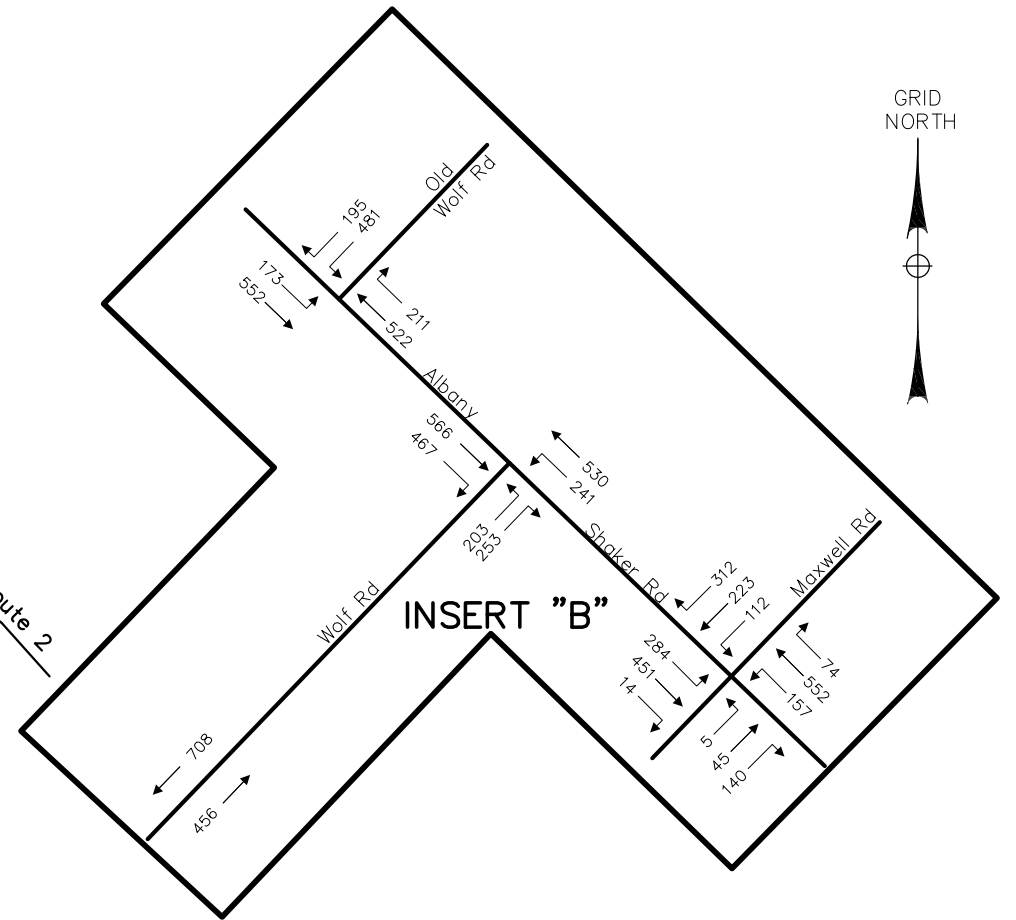
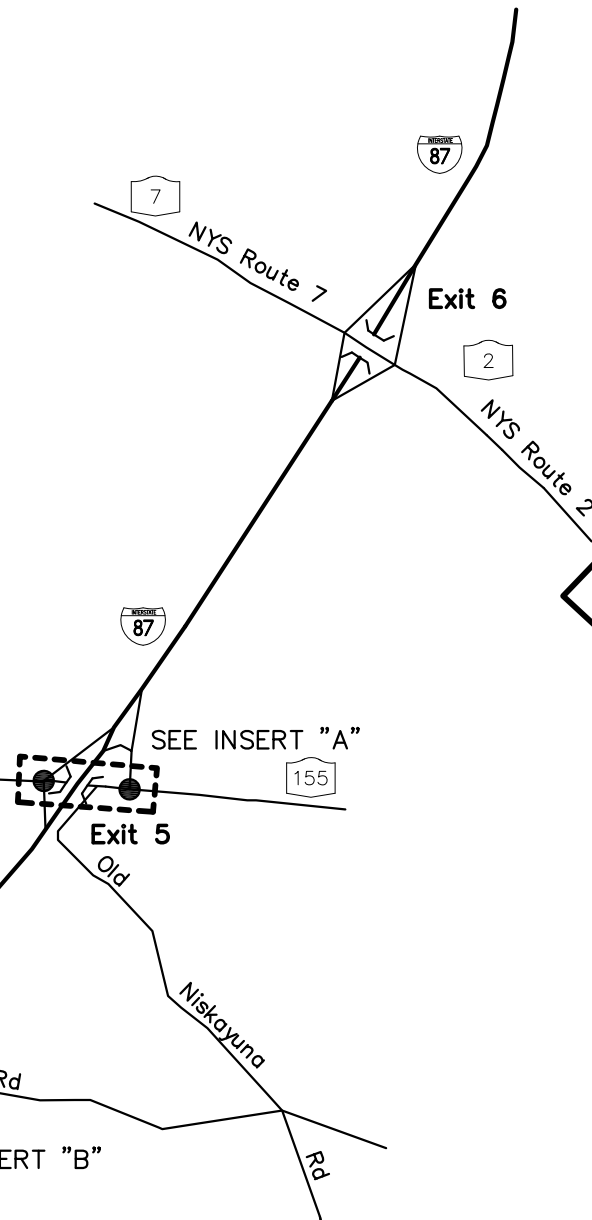
**INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS**



FIGURE
F-26
DATE:12/12



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

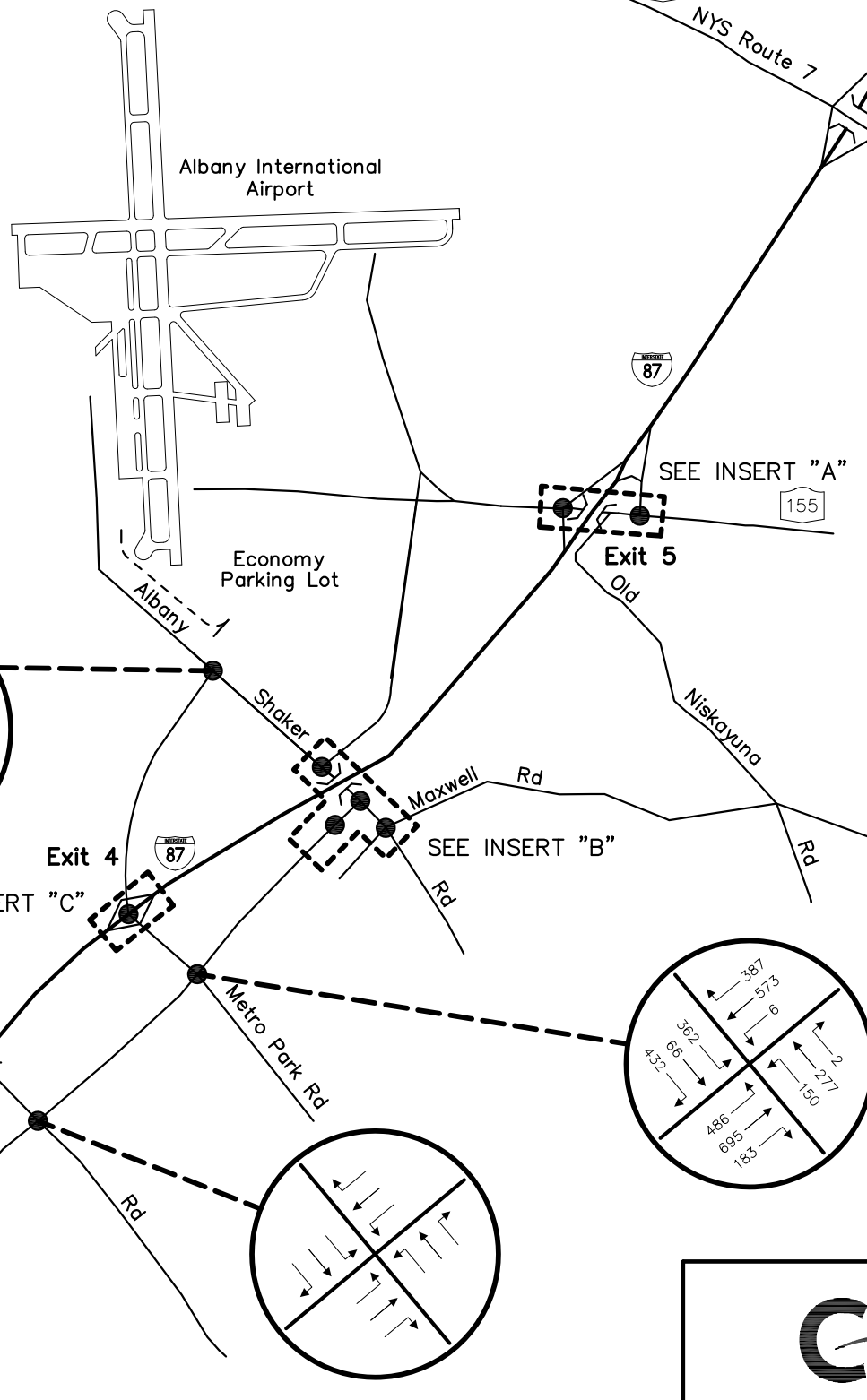
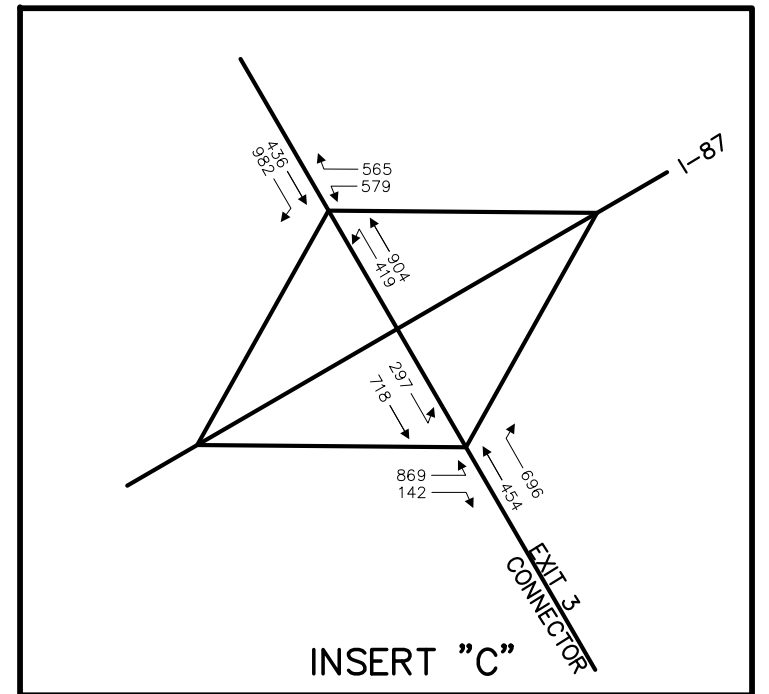
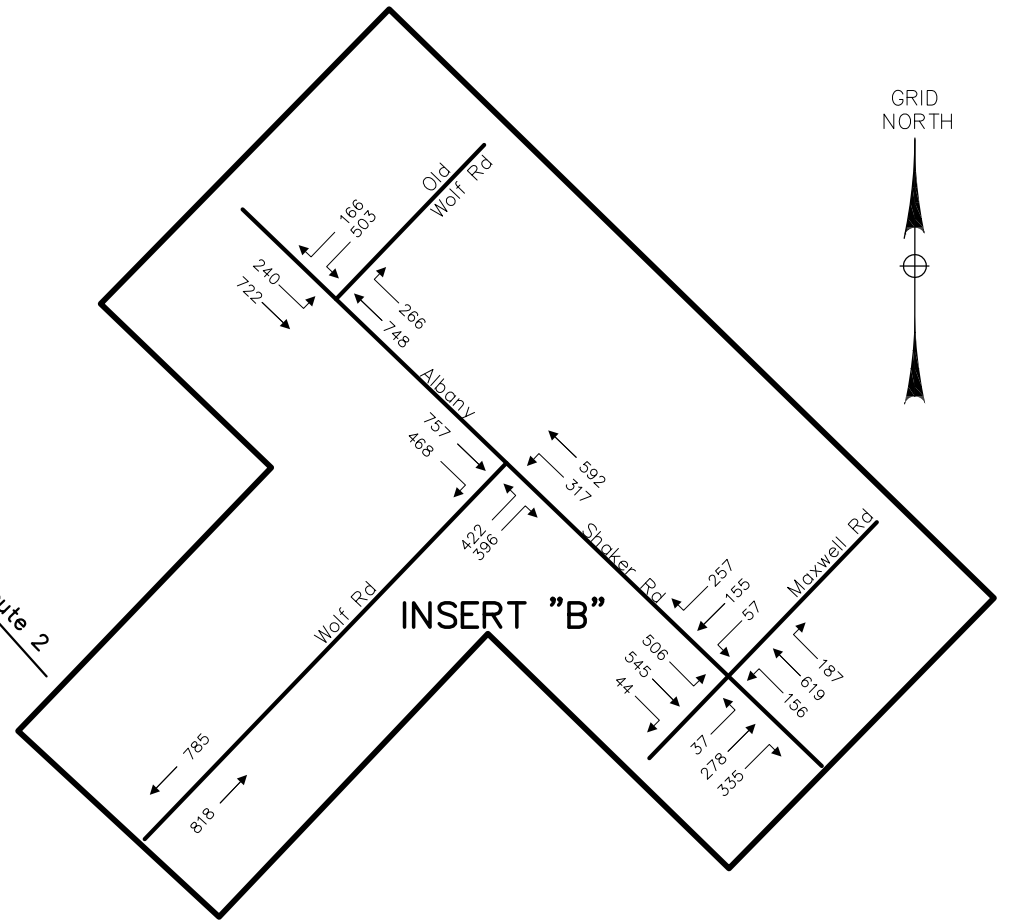
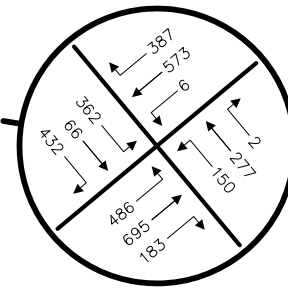
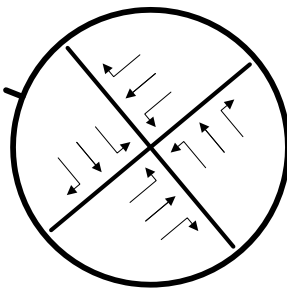
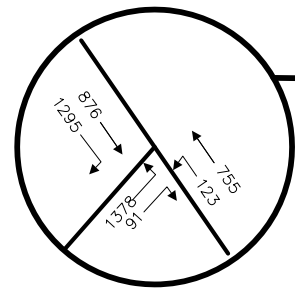
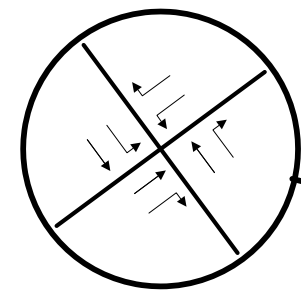
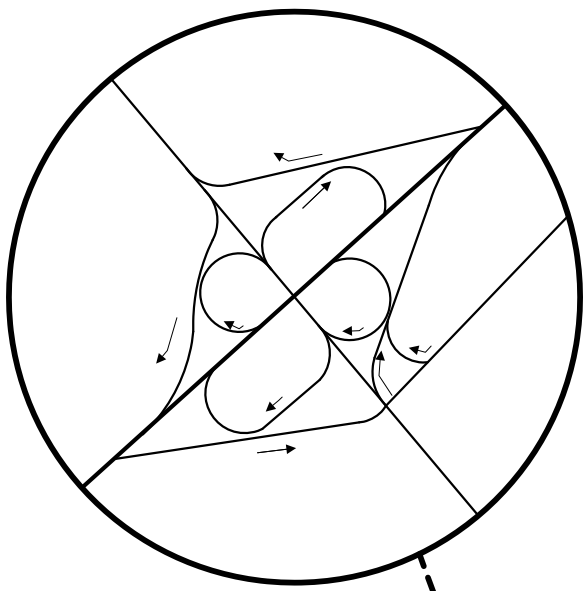
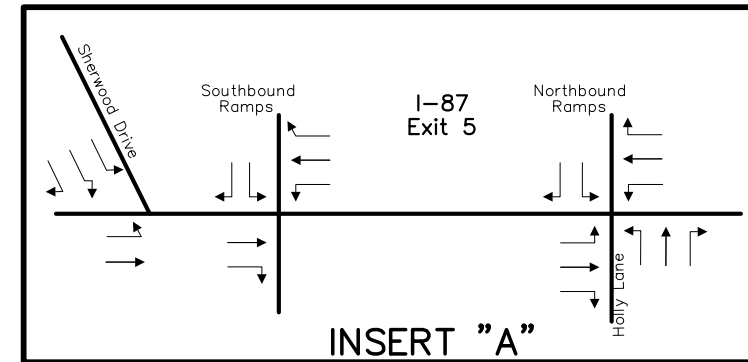
2046 DIAMOND ALTERNATIVE AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE

F-27

DATE:12/12



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

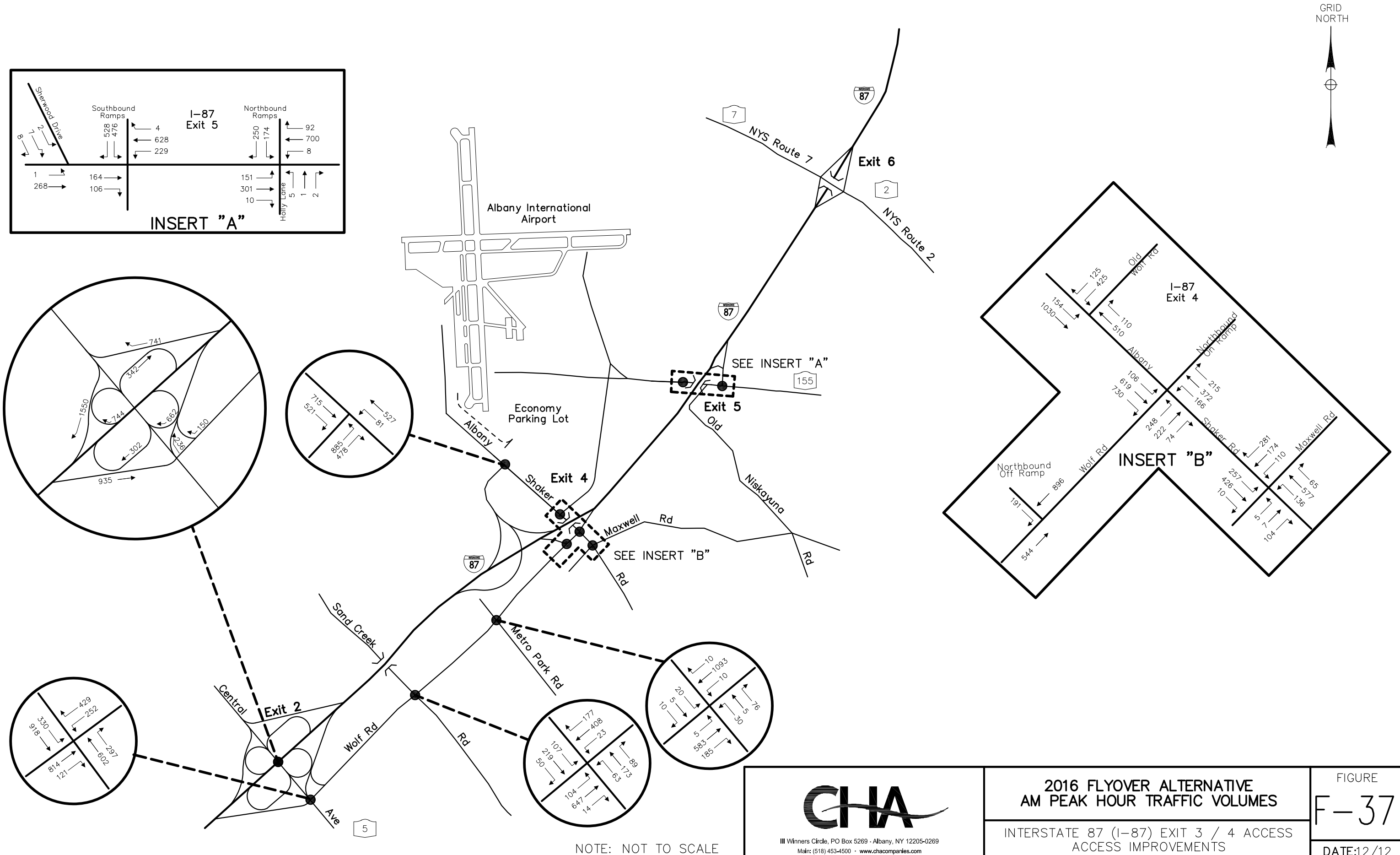
2046 DIAMOND ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

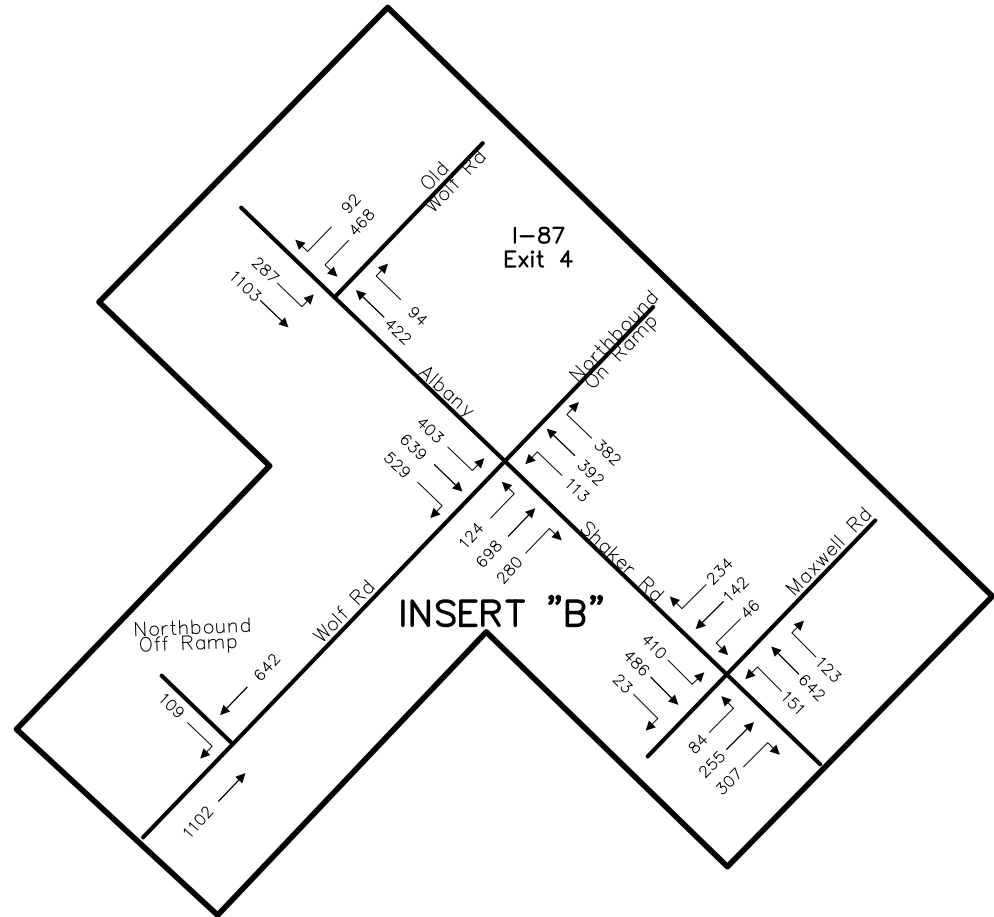
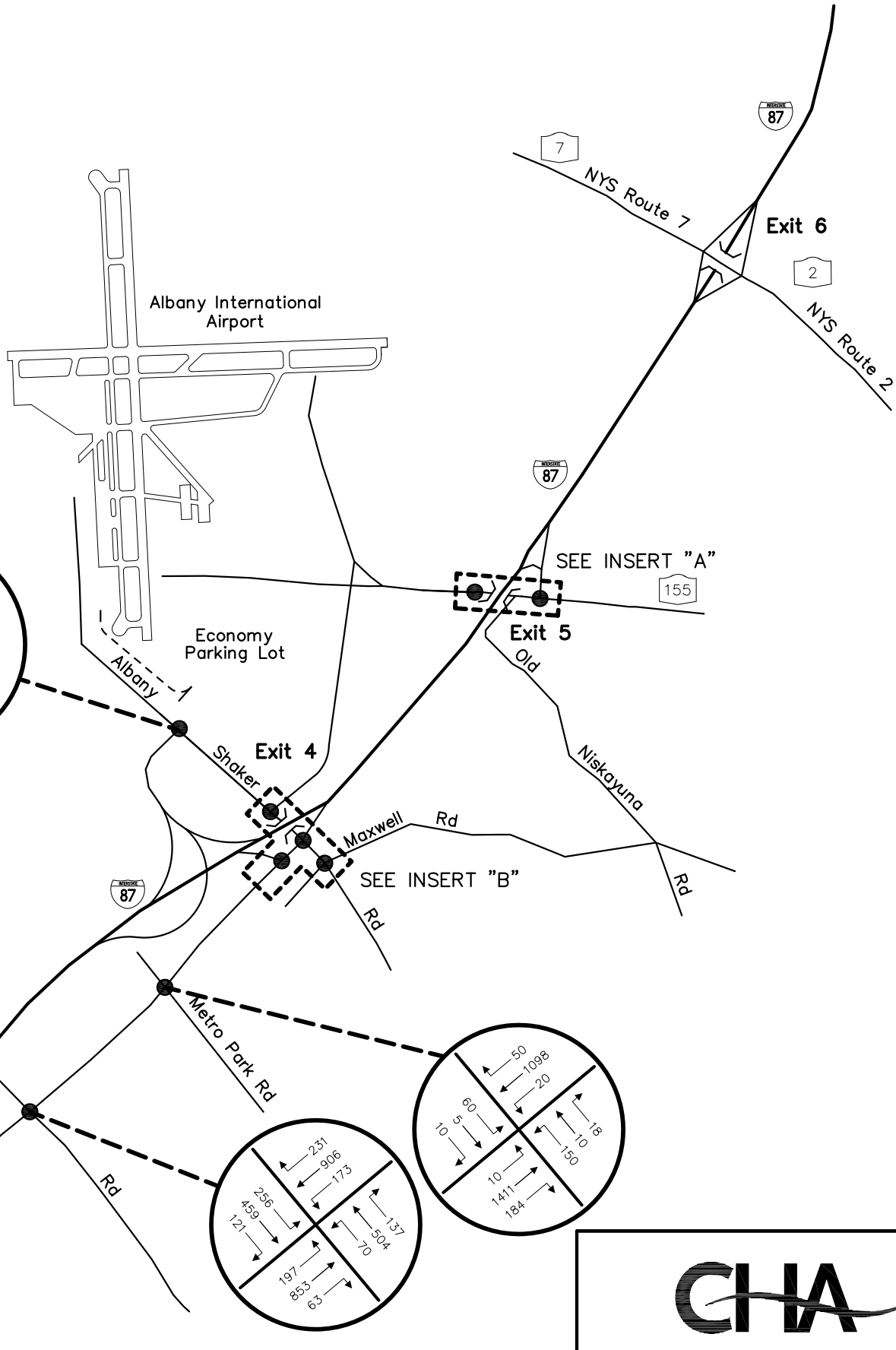
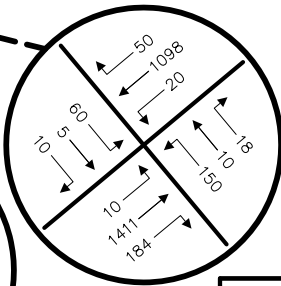
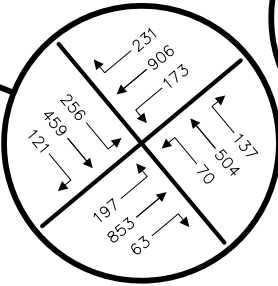
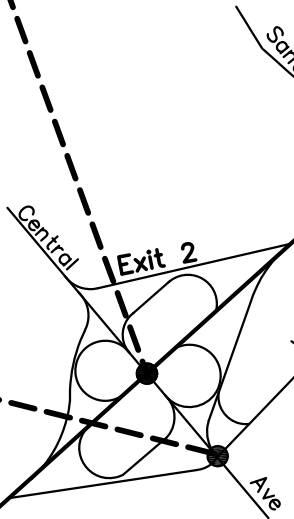
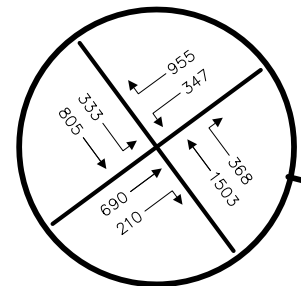
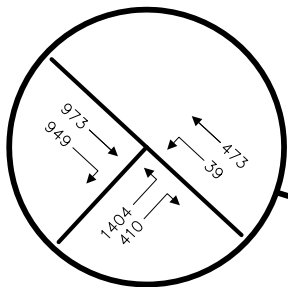
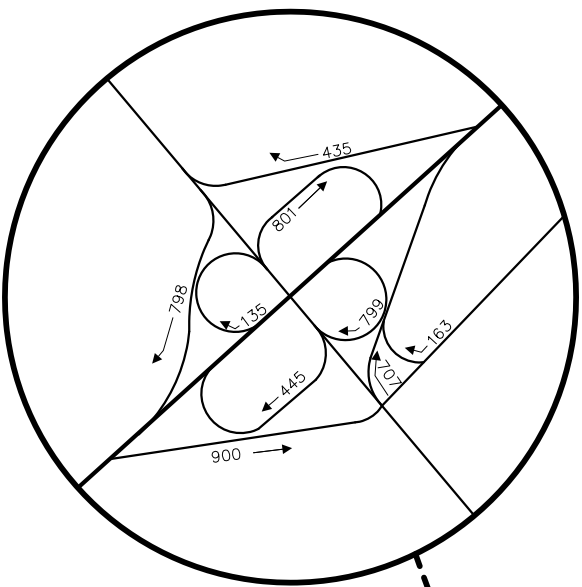
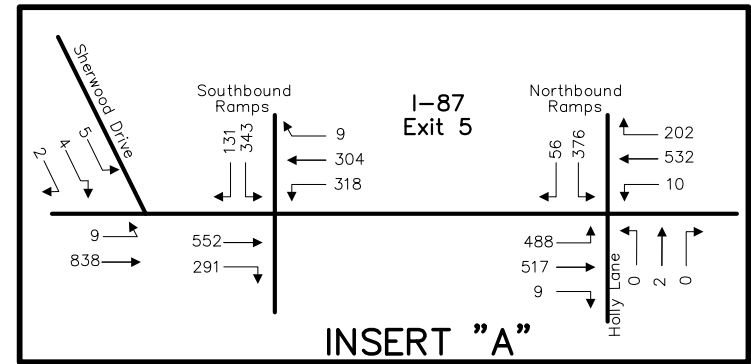
FIGURE

F-28

DATE:12/12



Saved: 12/31/2012 8:50:01 AM Plotted: 12/31/2012 8:50:27 AM User: Kinley, James
 FILE: U:\9456\ACAD\31\ACAD\2008-2009 ANALYSIS\DEIS FIGURES 2012\2016 PM FLYOVER.DWG



NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
 Main: (518) 453-4500 • www.chacompanies.com

2016 FLYOVER ALTERNATIVE
 PM PEAK HOUR TRAFFIC VOLUMES

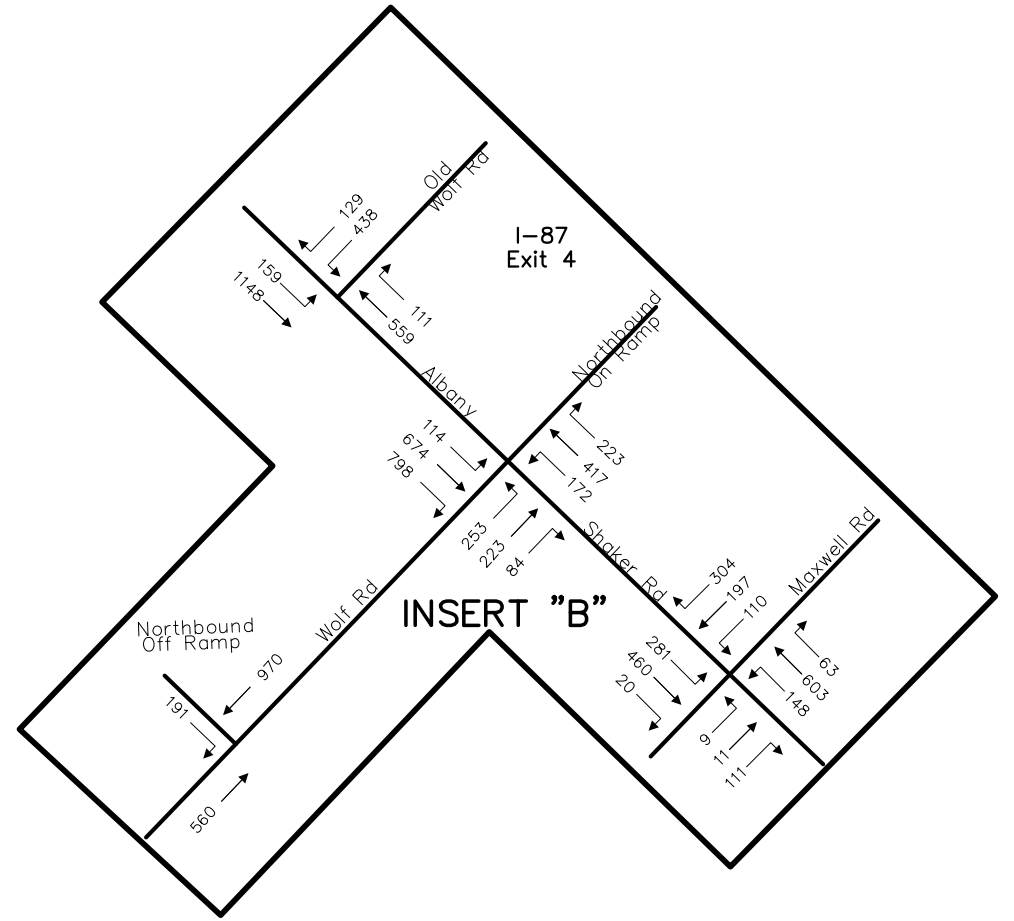
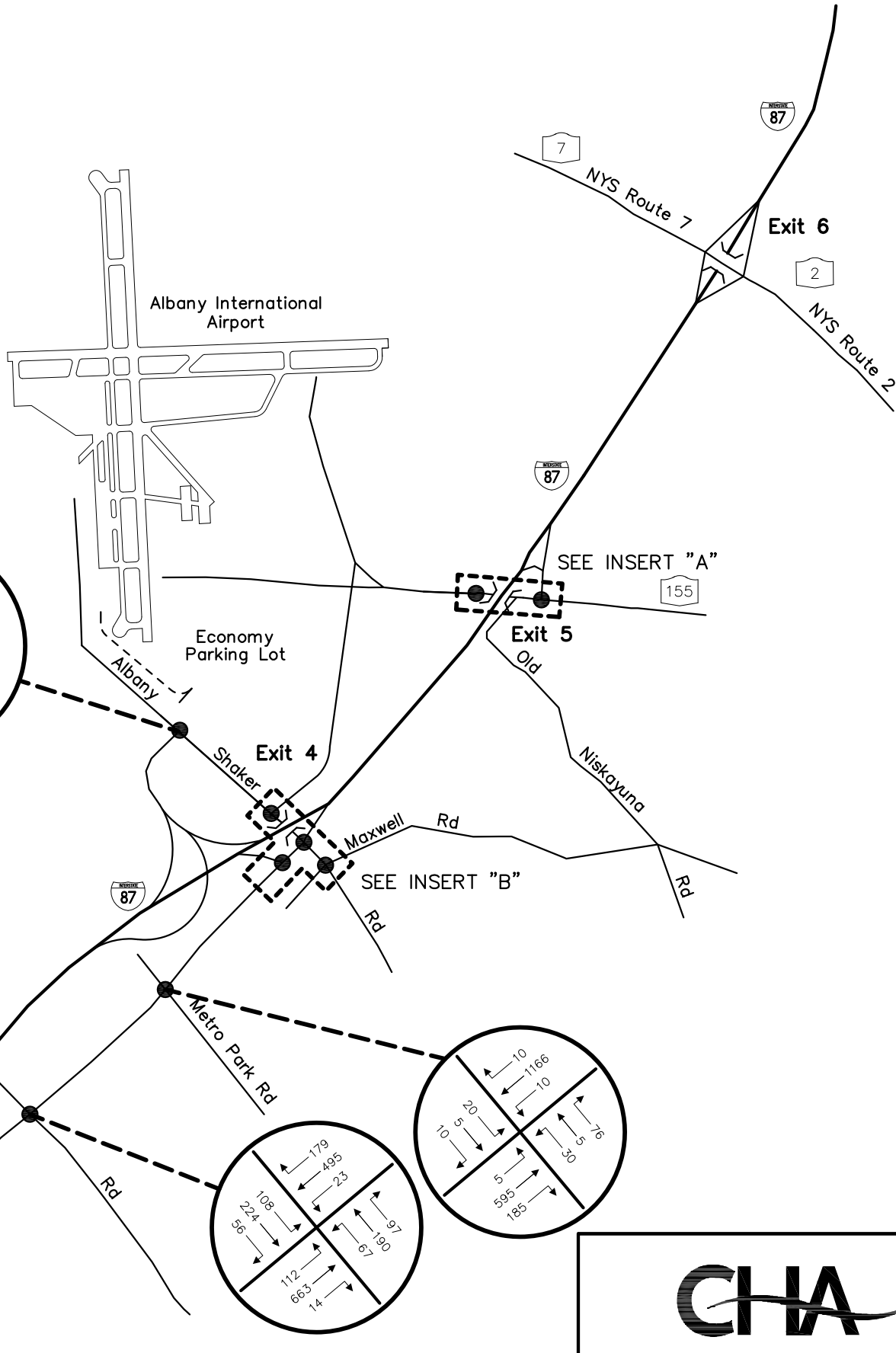
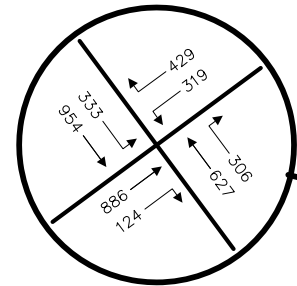
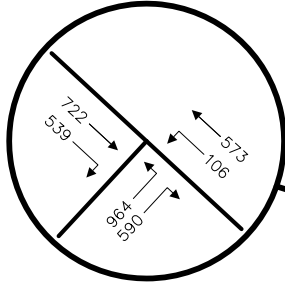
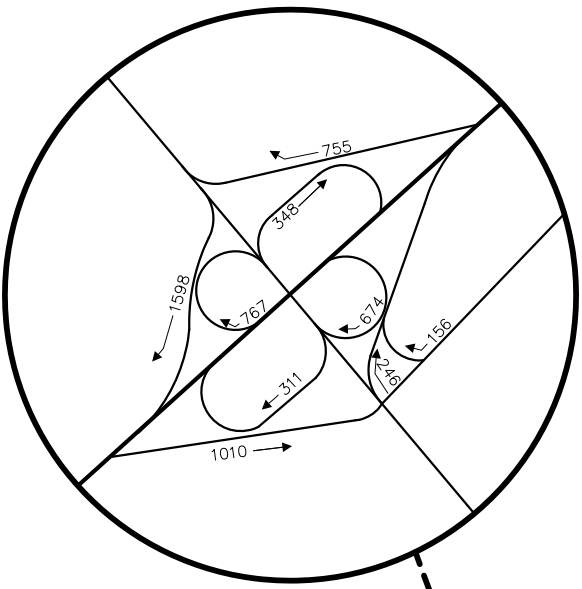
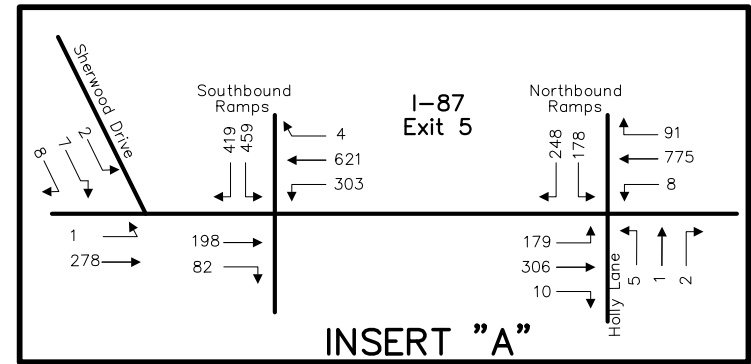
INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
 ACCESS IMPROVEMENTS

FIGURE

F-38

DATE:12/12

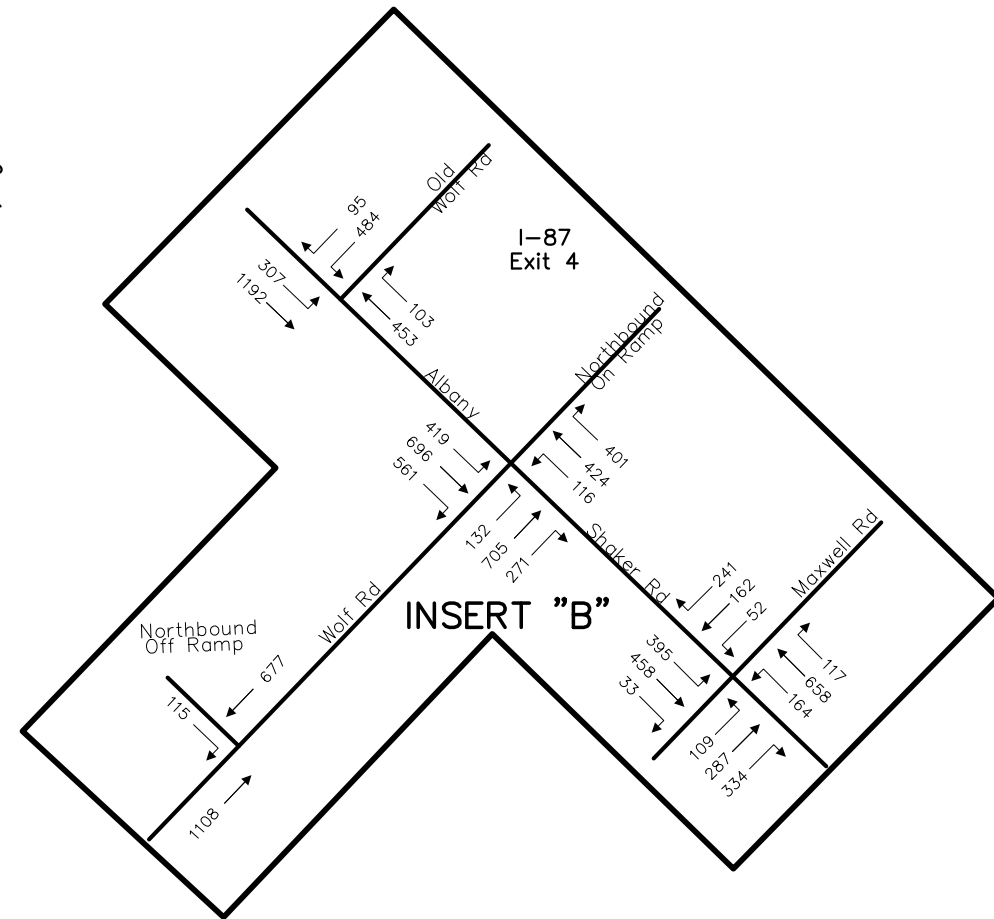
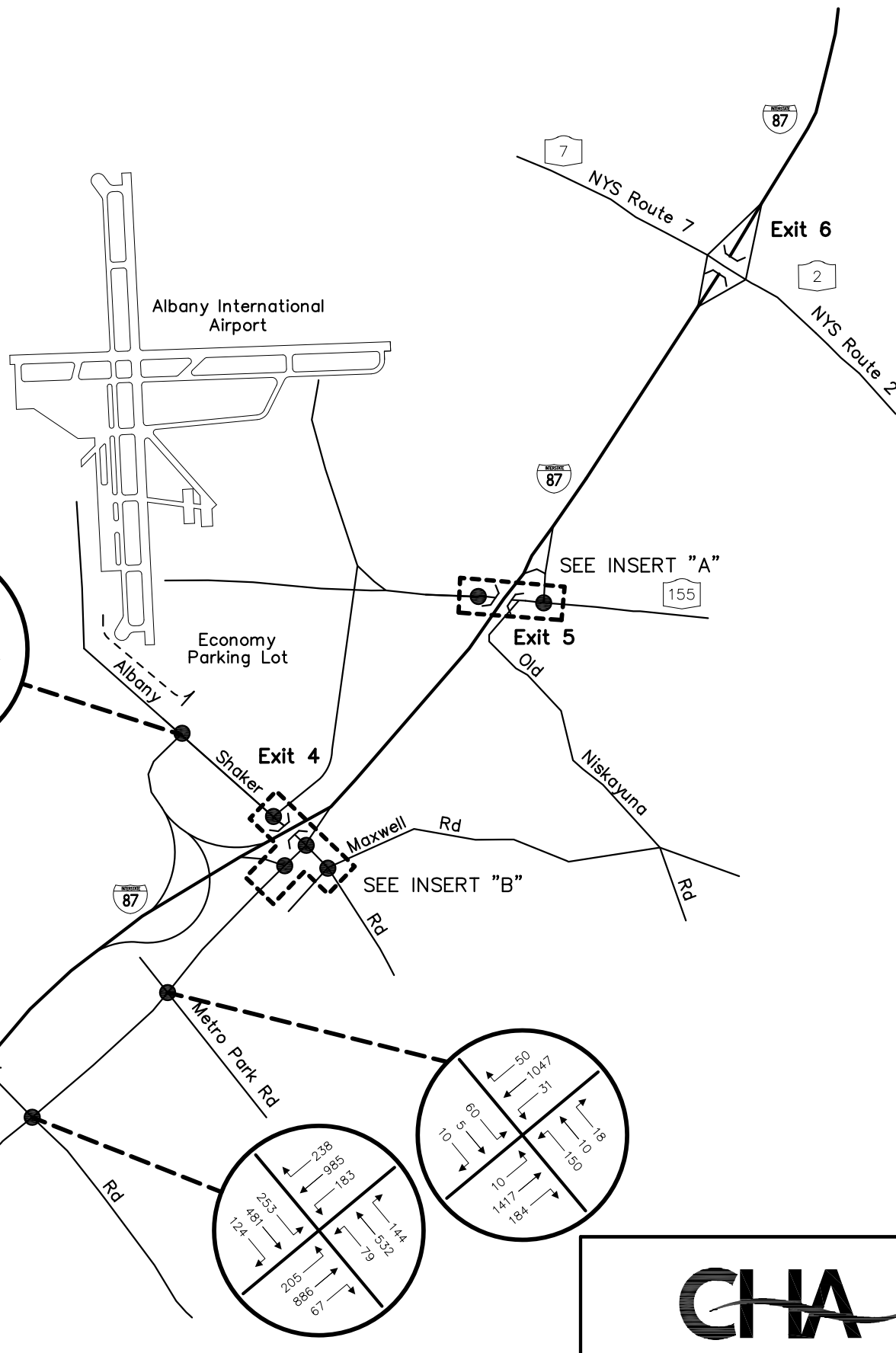
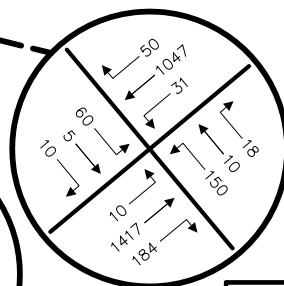
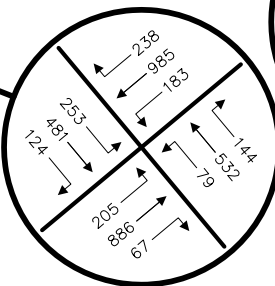
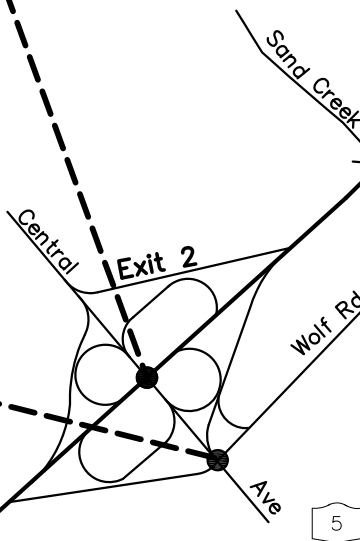
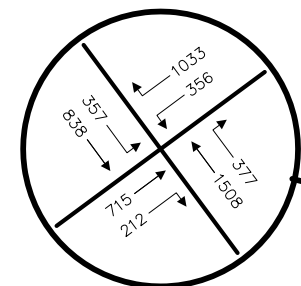
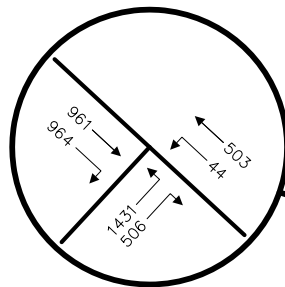
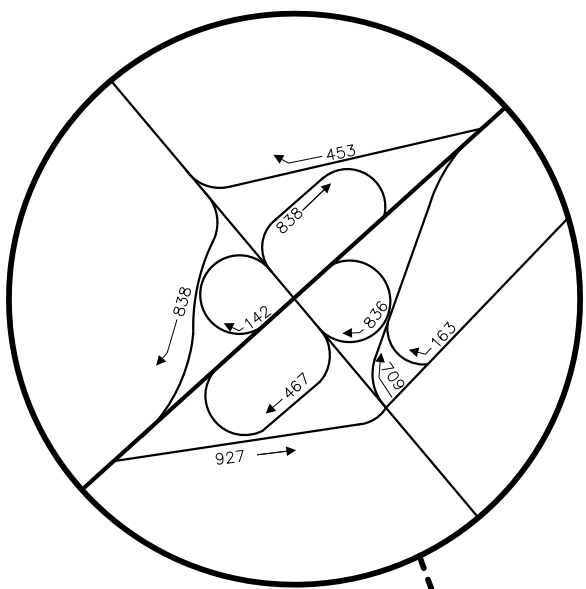
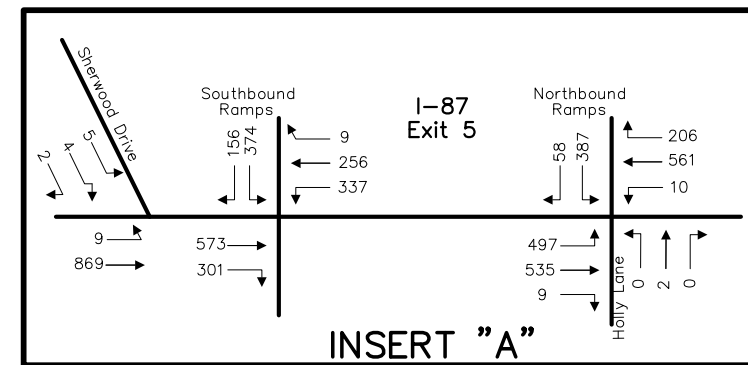
Saved: 1/9/2012 5:16:31 PM Plotted: 12/31/2012 8:52:29 AM User: Kinley, James
FILE: U:\9456\ACAD\31\ACAD\2008-2009 ANALYSIS\DEIS FIGURES 2012\2026 AM FLYOVER.DWG

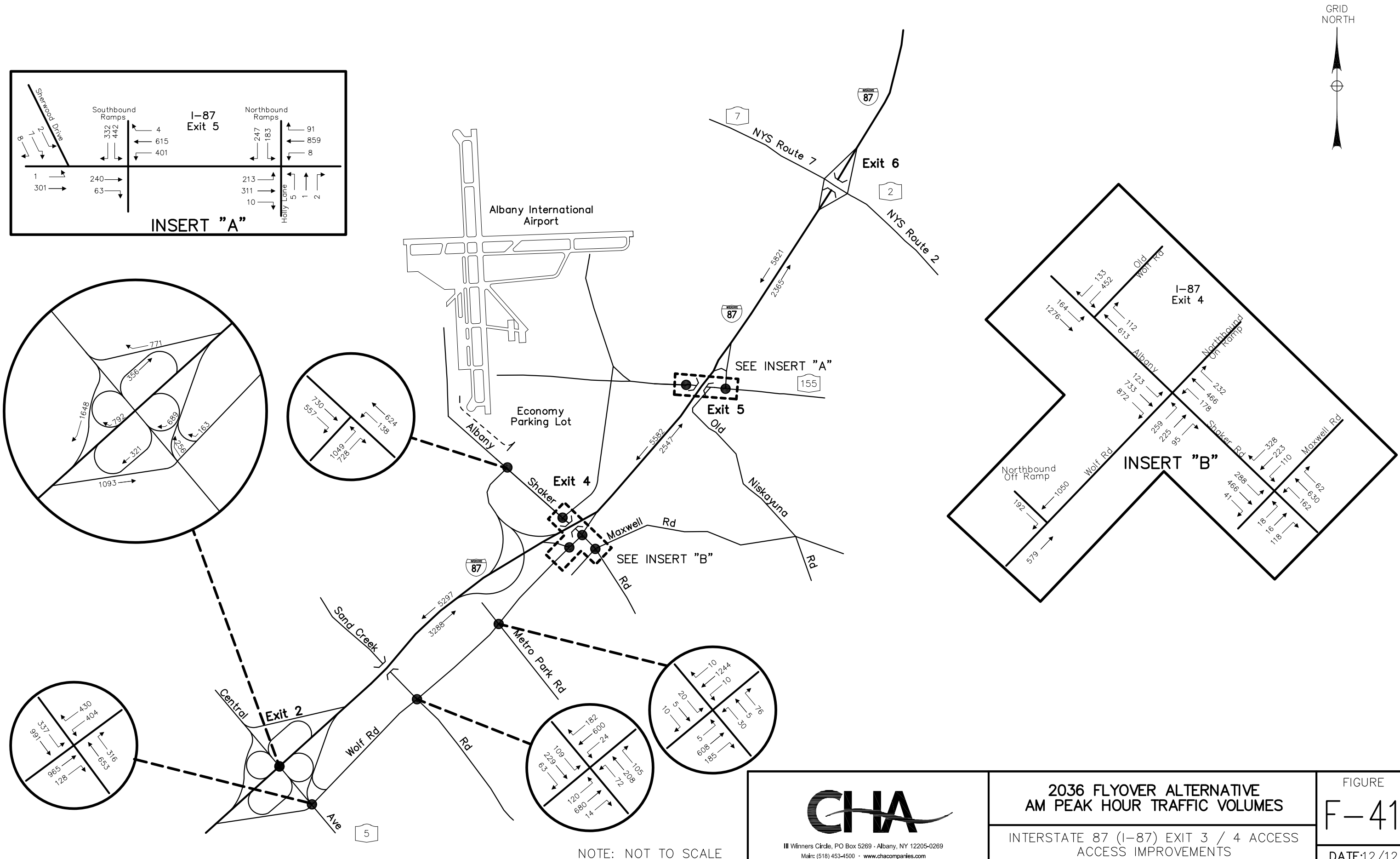


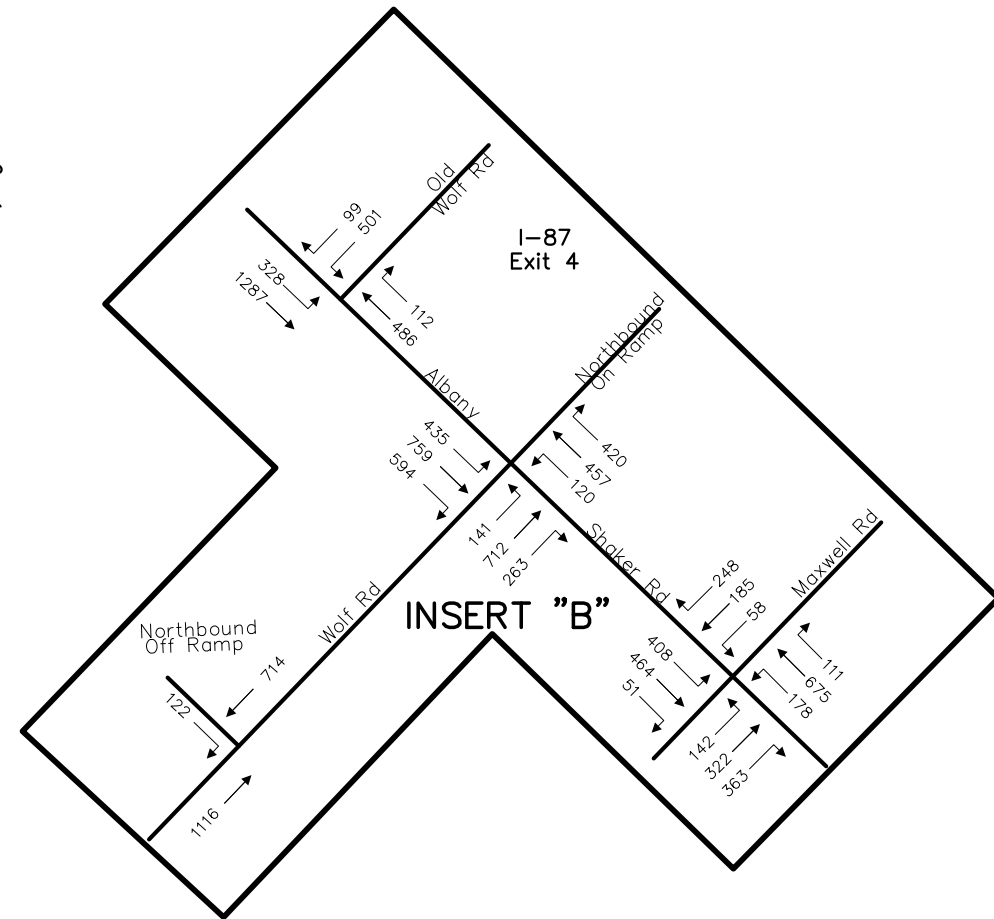
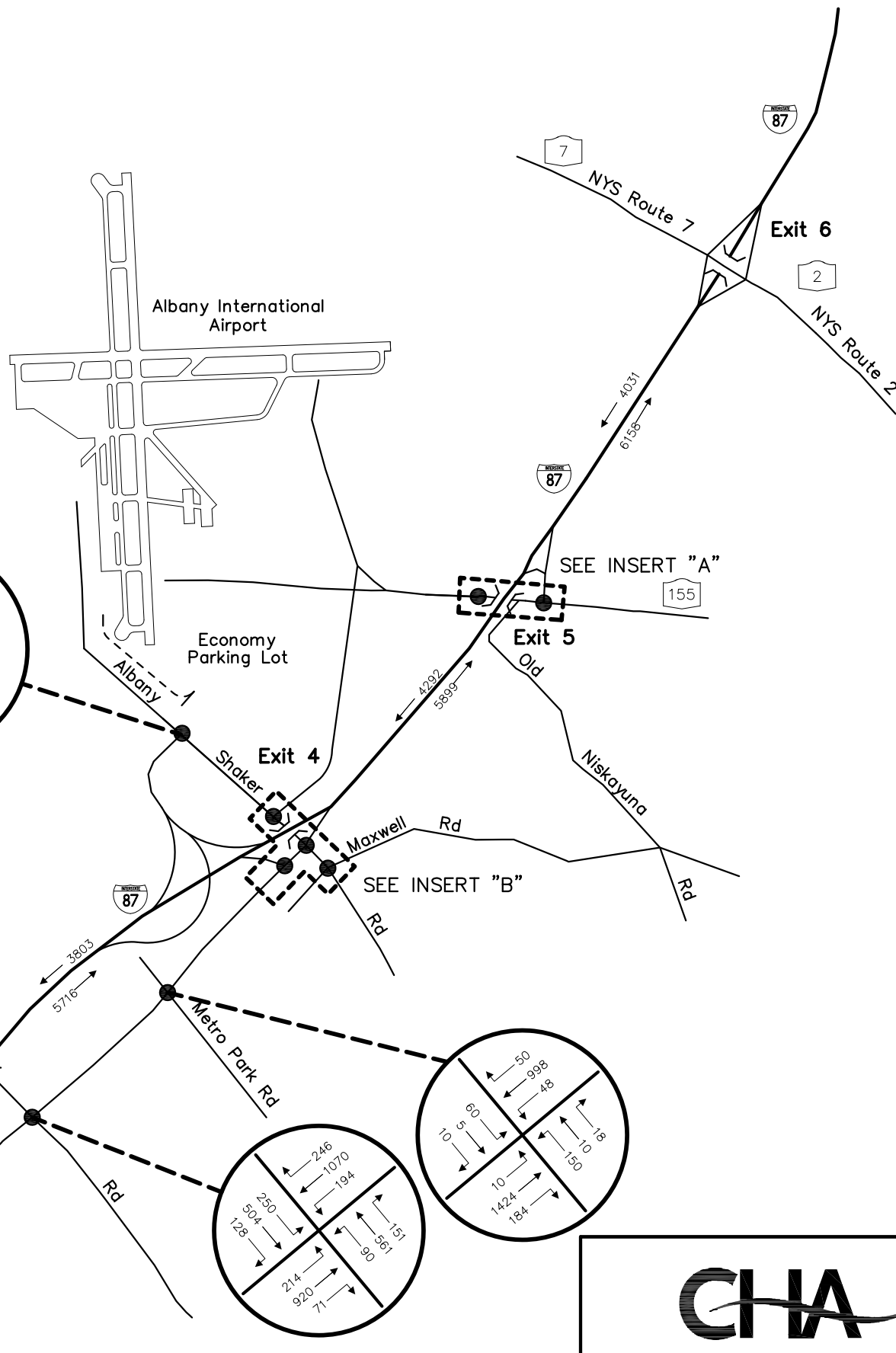
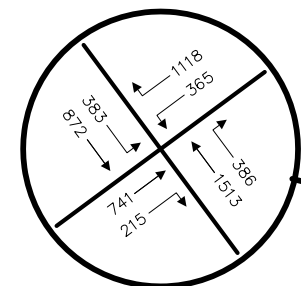
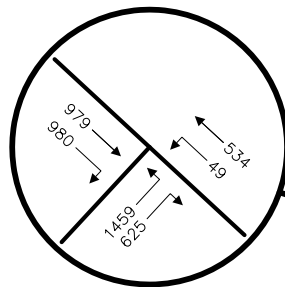
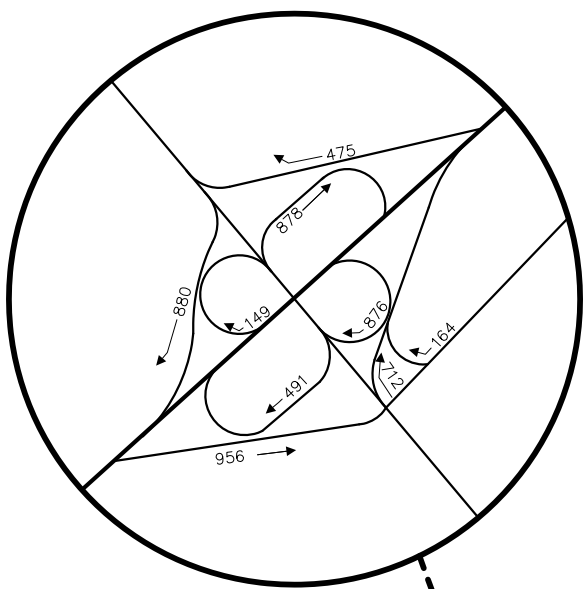
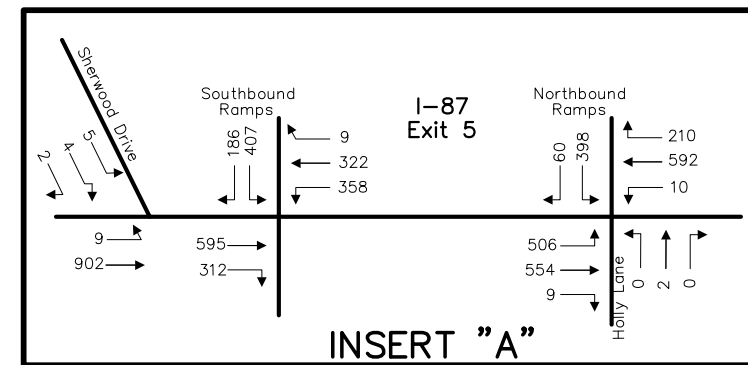
NOTE: NOT TO SCALE



2026 FLYOVER ALTERNATIVE AM PEAK HOUR TRAFFIC VOLUMES		FIGURE F-39
INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS ACCESS IMPROVEMENTS		DATE:12/12







NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

**2036 FLYOVER ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES**

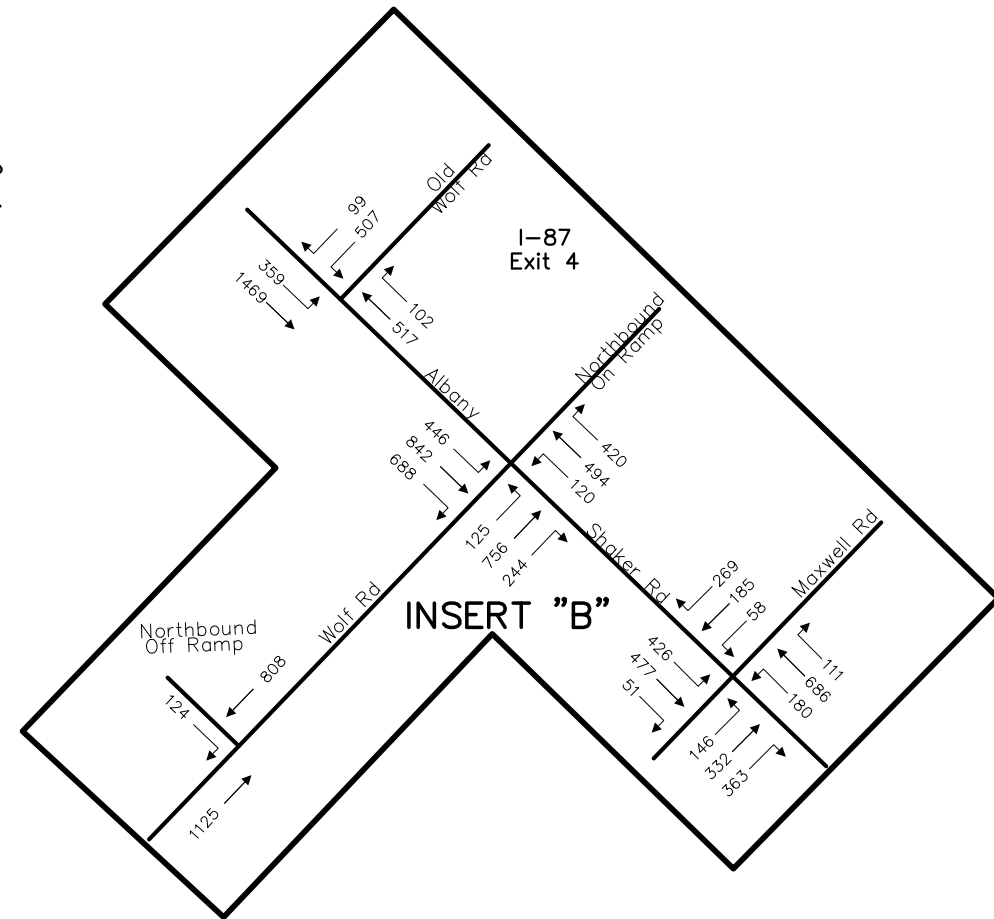
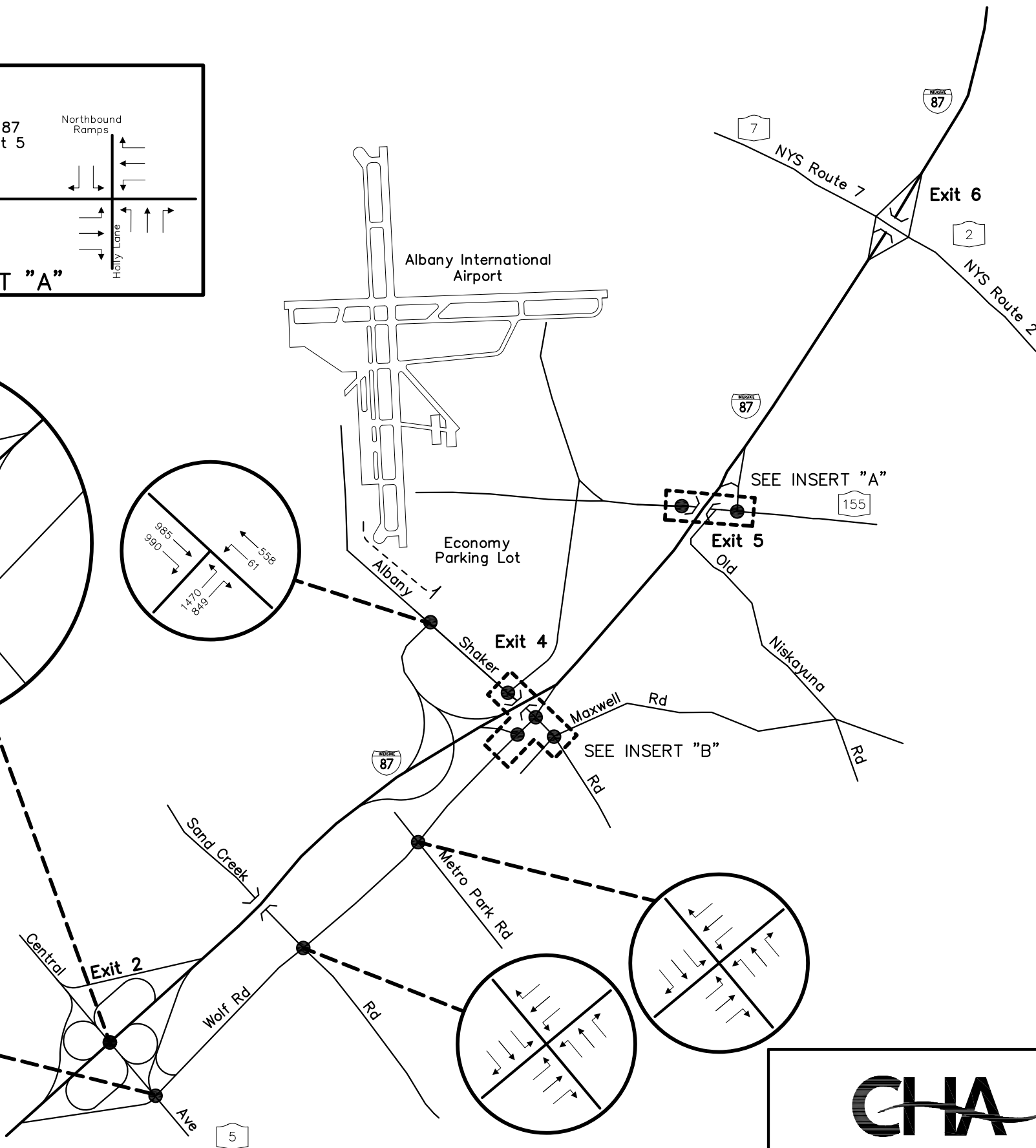
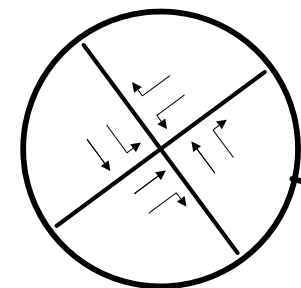
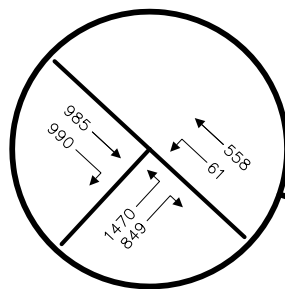
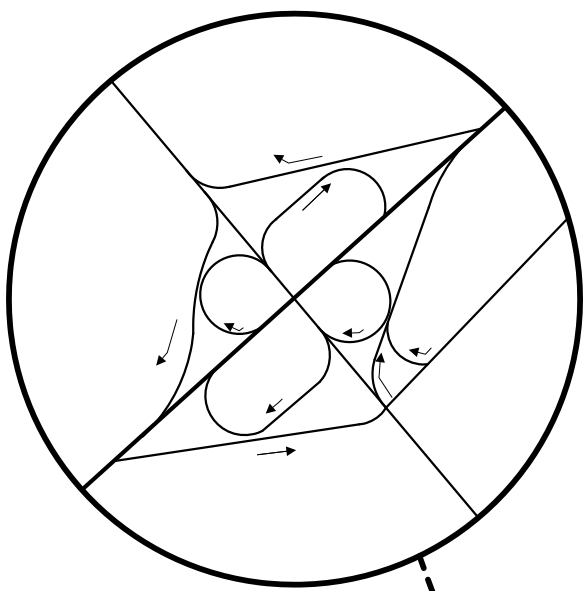
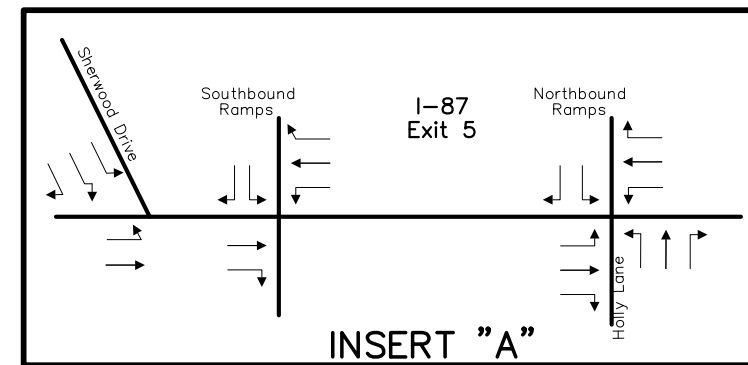
INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS

FIGURE

F-42

DATE:12/12





NOTE: NOT TO SCALE



III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 • www.chacompanies.com

2046 FLYOVER ALTERNATIVE
PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS
ACCESS IMPROVEMENTS



FIGURE

F-44

DATE:12/12

Exhibit F.5.1-1 Forecast Build Alternative Traffic Volumes Flyover Alternative								
Roadway: Segment	ETC (2016)		ETC+10 (2026)		ETC+20 (2036)		ETC+30 (2046)	
	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak
I-87: Exit 2 to Exit 4 NB	61,100	3250 5500	62,200	3350 5600	62,800	3500 5650	63,300	3550 5700
I-87: Exit 4 to Exit 2 SB	59,400	5350 3900	60,000	5400 4000	60,600	5450 4150	61,100	5500 4100
I-87: Exit 4 to Exit 5 NB	65,600	2700 5900	66,100	2750 5950	66,100	2800 5950	66,100	2800 5950
I-87: Exit 5 to Exit 4 SB	58,900	5300 3650	62,200	5600 3800	65,000	5850 3900	65,000	5850 3900
Albany-Shaker Rd: West of Old Wolf	19,000	1800 1900	20,500	2000 2050	22,000	2200 2200	24,500	2300 2450
Wolf Rd: South of Exit 4	18,500	1600 1850	19,000	1700 1900	19,500	1800 1950	20,500	1950 2050

(1) AADT is the Average Annual Daily Traffic.

Exhibit F.5.2-1 Forecast Build Alternative Traffic Volumes Diamond Alternative								
Roadway: Segment	ETC (2016)		ETC+10 (2026)		ETC+20 (2036)		ETC+30 (2046)	
	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak	AADT	AM Peak PM Peak
I-87: Exit 2 to Exit 4 NB	60,000	3300 5400	60,600	3500 5450	61,100	3650 5500	61,100	3650 5500
I-87: Exit 4 to Exit 2 SB	57,800	5200 3850	58,300	5250 3950	58,900	5300 4050	59,400	5350 4050
I-87: Exit 4 to Exit 5 NB	62,800	2500 5650	63,300	2600 5700	63,900	2650 5750	64,400	2650 5800
I-87: Exit 5 to Exit 4 SB	59,400	5350 3650	62,200	5600 3800	65,000	5850 3900	65,000	5850 3900
Albany-Shaker Rd: West of Old Wolf	18,000	1100 1800	18,500	1250 1850	19,500	1400 1950	20,000	1600 2000
Wolf Rd: South of Exit 4	14,000	900 1400	15,000	950 1500	16,500	1050 1650	17,000	1200 1700

(1) AADT is the Average Annual Daily Traffic.

INCREASE

DECREASE

From 12/7/2011

Eric, Below are the Northway volumes for the existing, no-build, flyover, and diamond alternatives. For the flyover alternative, there are some segments where the volumes decrease over time. These segments are highlighted in yellow. We are double checking with CDTC to make sure they provided us with the correct volumes, I'll let you know if any end up changing.

I looked into the peak hour for the study area, it's from 4:45 to 5:45. Can you provide us with the peak hour for the noise study? If it's different than the traffic peak, we can adjust the Northway volumes for that time.

Exhibit 2.3.1.6-2
Existing and Forecast Traffic Volumes

Roadway: Segment	Existing (2009)		ETC (2016)		ETC+10 (2026)		ETC+20 (2036)		ETC+30 (2046)	
	AADT ¹	AM Peak	AADT	AM Peak	AADT	AM Peak	AADT	AM Peak	AADT	AM Peak
		PM Peak		PM Peak		PM Peak		PM Peak		PM Peak
I-87: Exit 2 to Exit 4 Northbound	56,700	3000 5100	56,700	3000 5100	57,200	3000 5150	57,800	3000 5200	58,300	3000 5250
I-87: Exit 4 to Exit 2 Southbound	56,700	5150 3750	57,800	5200 3850	58,300	5250 3950	58,900	5300 4100	59,400	5350 4250
I-87: Exit 4 to Exit 5 Northbound	64,400	2700 5800	65,600	2750 5900	66,100	2750 5950	66,700	2800 6050	67,200	2850 6050
I-87: Exit 5 to Exit 4 Southbound	48,900	4400 2500	48,900	4400 2550	49,400	4450 2600	50,000	4550 2750	50,600	4550 2800
Albany-Shaker Rd: West of Old Wolf	26,000	2300 2600	33,000	2450 3300	35,000	2550 3500	37,500	2600 3750	39,500	2800 3950
Wolf Rd: South of Exit 4	25,000	1950 2500	20,000	2050 2000	21,000	2000 2100	22,500	2000 2250	26,500	2050 2650

(1) AADT is the Average Annual Daily Traffic.

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2009 Existing AM

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	39.9	D	Albany Shaker Road	EB L	43.2	D
	EB TT	19.5	B		EB TT	43.6	D
Central Avenue	WB TTT	38.5	D		EB R	26.9	C
	WB R	7.4	A	Albany Shaker Road	WB L	29.2	C
Exit 2 NB Off-Ramp	NB TTT	40.2	D		WB TT/R	40.2	D
Wolf Road	SB LL	46.6	D	Old Wolf Road	SB LL/T	56.8	E
	SB RR	5.9	A		SB R	49.4	D
OVERALL		29.2	C	OVERALL		44.3	D
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	33.7	C	Site Driveway	EB L/T/R	9.9	A
	EB T	32.6	C	CD Road	WB L/T/R	34.7	C
	EB R	4.3	A	Old Wolf Road	NB L/T/R	37.5	D
Sand Creek Road	WB L	39.1	D	Old Wolf Road	SB L/T/R	64.3	E
	WB T	37.7	D	OVERALL		39.2	D
	WB R	6.8	A	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	47.4	D	Watervliet Shaker Road	EB L/TT/R	15.4	B
	NB TT	21.9	C	Watervliet Shaker Road	WB LT	16.6	B
	NB R	7.8	A	Exit 5 SB Off-Ramp	SB L	24.3	C
Wolf Road	SB L	46.7	D		SB T/R	14.5	B
	SB TT	21.8	C	Sherwood Drive	SB L/T/R	24.9	C
	SB R	5.7	A	OVERALL		17.6	B
OVERALL		25.8	C	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park & Wolf Road				Watervliet Shaker Road	EB L	19.6	B
Hess Station	EB L/T/R	26.6	C		EB T/R	6.3	A
Metro Park Drive	WB L	36.1	D	Watervliet Shaker Road	WB L	12.9	B
	WB T/R	8.1	A		WB TT/R	12.1	B
Wolf Road	NB L	3.0	A	Holly Lane	NB L/T/R	34.6	C
	NB TT	3.2	A	Exit 5 NB Off-Ramp	SB L	22.7	C
	NB R	3.7	A		SB T/R	10.4	B
Wolf Road	SB L	9.9	A	OVERALL		13.0	B
	SB TT/R	4.5	A	Unsignalized Intersections			
OVERALL		5.7	A	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	76.6	E	Albany Shaker Road	EB L	9.4	A
	EB R	31.4	C		SB L	40.4	E
Wolf Road	NB TTT	11.7	B	Maxwell Road	SB R	51.4	F
	SB TT	6.7	A	Overall Network Vehicle Hours of Delay:			
OVERALL		26.0	C	234.9			
Albany Shaker Road & Wolf Road							
Albany Shaker Road	EB L	32.2	C				
	EB TT/R	32.7	C				
	EB R	17.2	B				
Albany Shaker Road	WB L	51.4	D				
	WB TT	25.9	C				
	WB R	5.3	A				
Wolf Road	NB L	64.4	E				
	NB L/TT	41.4	D				
	NB R	19.0	B				
OVERALL		32.3	C				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
Exit 3/4
VISSIM Analysis Results
2009 Existing PM

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	55.5	E	Albany Shaker Road	EB L	128.9	F
	EB TT	20.3	C		EB TT	119.6	F
Central Avenue	WB TTT	40.5	D		EB R	108.5	F
	WB R	19.3	B	Albany Shaker Road	WB L	84.1	F
Exit 2 NB Off-Ramp	NB TTT	54.3	D		WB TT/R	27.8	C
Wolf Road	SB LL	63.7	E	Old Wolf Road	SB LL/T	76.4	E
	SB RR	27.6	C		SB R	49.9	D
OVERALL		36.6	D	OVERALL		80.3	F
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	110.8	F	Site Driveway	EB L/T/R	6.3	A
	EB T	98.2	F	CD Road	WB L/T/R	34.7	C
	EB R	49.8	D	Old Wolf Road	NB L/T/R	14.4	B
Sand Creek Road	WB L	64.4	E	Old Wolf Road	SB L/T/R	39.1	D
	WB T	67.9	E	OVERALL		31.6	C
	WB R	16.3	B	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	65.0	E	Watervliet Shaker Road	EB L/TT/R	34.0	C
	NB TT	36.7	D	Watervliet Shaker Road	WB LT	21.2	C
	NB R	13.8	B	Exit 5 SB Off-Ramp	SB L	33.6	C
Wolf Road	SB L	70.9	E		SB T/R	6.1	A
	SB TT	37.9	D	Sherwood Drive	SB L/T/R	38.7	D
	SB R	19.0	B	OVERALL		28.4	C
OVERALL		54.1	D	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park Drive & Wolf Road				Watervliet Shaker Road	EB L	30.6	C
Hess Station	EB L/T/R	36.0	D		EB T/R	9.1	A
Metro Park Drive	WB L	43.5	D	Watervliet Shaker Road	WB L	19.1	B
	WB T/R	22.8	C		WB TT/R	19.6	B
Wolf Road	NB L	10.1	B	Holly Lane	NB L/T/R	42.2	D
	NB TT	14.2	B	Exit 5 NB Off-Ramp	SB L	32.5	C
	NB R	9.5	A		SB T/R	10.5	B
Wolf Road	SB L	26.1	C	OVERALL		21.4	C
	SB TT/R	6.0	A	Unsignalized Intersections			
OVERALL		14.4	B	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	107.9	F	Albany Shaker Road	EB L	48.5	E
	EB R	19.8	B		SB L	32.3	D
Wolf Road	NB TTT	100.6	F	Maxwell Road	SB R	37.5	E
	SB TT	4.1	A				
OVERALL		68.6	E				
Albany Shaker Road & Wolf Road							
Albany Shaker Road	EB L	92.8	F				
	EB TT/R	50.4	D				
	EB R	19.6	B				
Albany Shaker Road	WB L	55.6	E				
	WB TT	41.3	D				
	WB R	27.0	C				
Wolf Road	NB L	57.6	E				
	NB L/TT	62.4	E				
	NB R	36.2	D				
OVERALL		48.9	D				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay: 489.5

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2016 (ETC) No Build - AM Peak Hour

Signalized Intersections					Signalized Intersections				
Intersection/Approach		Vehicles	Delay *	LOS	Intersection/Approach		Vehicles	Delay *	LOS
Central Avenue & Wolf Road					Albany Shaker Road & Old Wolf Road				
Central Avenue	EB LL	279	40.4	D	Albany Shaker Road	EB L	103	47.4	D
	EB TT	972	20.5	C		EB TT	851	45.5	D
Central Avenue	WB TTT	577	38.6	D		EB R	306	32.8	C
	WB R	307	8.8	A	Albany Shaker Road	WB L	224	67.2	E
Exit 2 NB Off-Ramp	NB TTT	833	40.4	D		WB TT/R	983	24.4	C
Wolf Road	SB LL	187	47.5	D	Old Wolf Road	SB LL/T	876	81.6	F
	SB RR	293	7.0	A		SB R	344	66.9	E
OVERALL		3447	29.2	C	OVERALL		3686	50.7	D
Sand Creek Road & Wolf Road					Old Wolf Road & CD Road				
Sand Creek Road	EB L	95	31.1	C	Site Driveway	EB L/T/R	18	8.9	A
	EB T	230	28.1	C	CD Road	WB L/T/R	1039	70.0	E
	EB R	41	2.4	A	Old Wolf Road	NB L/T/R	232	42.9	D
Sand Creek Road	WB L	58	35.8	D	Old Wolf Road	SB L/T/R	237	243.3	F
	WB T	177	32.0	C	OVERALL		1525	92.1	F
	WB R	90	5.2	A	Exit 5 SB Ramps & Watervliet Shaker Road				
Wolf Road	NB L	138	42.9	D	Watervliet Shaker Road	EB L/TT/R	222	16.4	B
	NB TT	650	13.1	B	Watervliet Shaker Road	WB LT	993	18.8	B
	NB R	15	6.1	A	Exit 5 SB Off-Ramp	SB L	450	24.5	C
Wolf Road	SB L	23	47.9	D		SB T/R	234	13.8	B
	SB TT	498	19.7	B	Sherwood Drive	SB L/T/R	16	25.8	C
	SB R	194	9.8	A	OVERALL		1914	19.3	B
OVERALL		2209	20.4	C	Exit 5 NB Ramps & Watervliet Shaker Road				
Metro Park & Wolf Road					Watervliet Shaker Road	EB L	154	20.2	C
Hess Station	EB L/T/R	18	33.9	C		EB T/R	262	10.4	B
Metro Park Drive	WB L	30	42.9	D	Watervliet Shaker Road	WB L	9	10.7	B
	WB T/R	40	9.3	A		WB TT/R	876	12.2	B
Wolf Road	NB L	6	3.3	A	Holly Lane	NB L/T/R	8	30.7	C
	NB TT	626	2.0	A	Exit 5 NB Off-Ramp	SB L	179	23.3	C
	NB R	138	3.9	A		SB T/R	272	10.7	B
Wolf Road	SB L	11	4.5	A	OVERALL		1760	13.6	B
	SB TT/R	1223	2.9	A	Unsignalized Intersections				
OVERALL		2092	3.7	A					
Exit 4 NB Off-Ramp & Wolf Road					Intersection/Approach		Vehicles	Delay *	LOS
Exit 4 NB Off-Ramp	EB LL	557	56.4	E	Maxwell Road & Albany Shaker Road				
	EB R	191	16.6	B	Albany Shaker Road	EB L			
Wolf Road	NB TTT	648	11.6	B		SB L			
	SB TT	1167	9.1	A	Maxwell Road	SB R			
OVERALL		2563	20.5	C					
Albany Shaker Road & Wolf Road									
Albany Shaker Road	EB L	146	41.7	D					
	EB TT/R	687	23.0	C					
	EB R	892	12.7	B					
Albany Shaker Road	WB L	169	33.8	C					
	WB TT	561	22.2	C					
	WB R	183	5.2	A					
Wolf Road	NB L	387	51.4	D					
	NB L/TT	584	38.5	D					
	NB R	229	7.9	A					
OVERALL		3837	25.1	C					

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay:

243.4

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC) No Build - PM Peak Hour

Signalized Intersections					Signalized Intersections				
Intersection/Approach		Vehicles	Delay *	LOS	Intersection/Approach		Vehicles	Delay *	LOS
Central Avenue & Wolf Road					Albany Shaker Road & Old Wolf Road				
Central Avenue	EB LL	316	55.0	D	Albany Shaker Road	EB L	183	416.1	F
	EB TT	802	19.5	B		EB TT	729	330.6	F
Central Avenue	WB TTT	1343	43.6	D		EB R	648	242.7	F
	WB R	480	18.8	B	Albany Shaker Road	WB L	223	85.6	F
Exit 2 NB Off-Ramp	NB TTT	652	54.0	D		WB TT/R	1033	31.4	C
Wolf Road	SB LL	252	58.1	E	Old Wolf Road	SB LL/T	701	70.0	E
	SB RR	650	27.3	C		SB R	470	46.1	D
OVERALL		4496	37.4	D	OVERALL		3987	149.7	F
Sand Creek Road & Wolf Road					Old Wolf Road & CD Road				
Sand Creek Road	EB L	225	128.3	F	Site Driveway	EB L/T/R	8	6.3	A
	EB T	419	101.5	F	CD Road	WB L/T/R	784	27.0	C
	EB R	112	55.0	D	Old Wolf Road	NB L/T/R	311	14.2	B
Sand Creek Road	WB L	62	158.4	F	Old Wolf Road	SB L/T/R	413	27.5	C
	WB T	447	170.3	F	OVERALL		1516	24.4	C
	WB R	116	90.0	F	Exit 5 SB Ramps & Watervliet Shaker Road				
Wolf Road	NB L	232	68.4	E	Watervliet Shaker Road	EB L/TT/R	737	43.2	D
	NB TT	893	36.5	D	Watervliet Shaker Road	WB LT	641	22.8	C
	NB R	65	14.4	B	Exit 5 SB Off-Ramp	SB L	351	34.2	C
Wolf Road	SB L	178	66.3	E		SB T/R	301	22.0	C
	SB TT	849	36.8	D	Sherwood Drive	SB L/T/R	12	43.9	D
	SB R	208	19.0	B	OVERALL		2041	32.1	C
OVERALL		3805	71.0	E	Exit 5 NB Ramps & Watervliet Shaker Road				
Metro Park Drive & Wolf Road					Watervliet Shaker Road	EB L	468	27.0	C
Hess Station	EB L/T/R	74	40.6	D		EB T/R	549	10.0	B
Metro Park Drive	WB L	135	48.9	D	Watervliet Shaker Road	WB L	10	14.1	B
	WB T/R	12	38.1	D		WB TT/R	685	19.2	B
Wolf Road	NB L	9	25.0	C	Holly Lane	NB L/T/R	2	41.0	D
	NB TT	1578	28.8	C	Exit 5 NB Off-Ramp	SB L	366	31.0	C
	NB R	170	25.8	C		SB T/R	54	10.0	A
Wolf Road	SB L	35	11.7	B	OVERALL		2135	20.3	C
	SB TT/R	1162	5.2	A	Unsignalized Intersections				
OVERALL		3175	21.0	C	Intersection/Approach		Vehicles	Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road					Maxwell Road & Albany Shaker Road				
Exit 4 NB Off-Ramp	EB LL	479	80.5	F	Albany Shaker Road	EB L			
	EB R	134	7.6	A		SB L			
Wolf Road	NB TTT	1080	182.9	F	Maxwell Road	SB R			
	SB TT	588	6.4	A					
OVERALL		2280	105.6	F					
Albany Shaker Road & Wolf Road									
Albany Shaker Road	EB L	320	132.3	F					
	EB TT/R	575	27.0	C					
	EB R	453	10.1	B					
Albany Shaker Road	WB L	81	24.5	C					
	WB T T	620	36.8	D					
	WB R	338	33.2	C					
Wolf Road	NB L	417	67.4	E					
	NB L/TT	834	72.3	E					
	NB R	292	12.9	B					
OVERALL		3928	48.5	D					

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay:

623.5

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2016 (ETC) No Build - AM Peak Hour

Signalized Intersections					Signalized Intersections				
Intersection/Approach		Vehicles	Delay *	LOS	Intersection/Approach		Vehicles	Delay *	LOS
Central Avenue & Wolf Road					Albany Shaker Road & Old Wolf Road				
Central Avenue	EB LL	279	40.4	D	Albany Shaker Road	EB L	103	47.4	D
	EB TT	972	20.5	C		EB TT	851	45.5	D
Central Avenue	WB TTT	577	38.6	D		EB R	306	32.8	C
	WB R	307	8.8	A	Albany Shaker Road	WB L	224	67.2	E
Exit 2 NB Off-Ramp	NB TTT	833	40.4	D		WB TT/R	983	24.4	C
Wolf Road	SB LL	187	47.5	D	Old Wolf Road	SB LL/T	876	81.6	F
	SB RR	293	7.0	A		SB R	344	66.9	E
OVERALL		3447	29.2	C	OVERALL		3686	50.7	D
Sand Creek Road & Wolf Road					Old Wolf Road & CD Road				
Sand Creek Road	EB L	95	31.1	C	Site Driveway	EB L/T/R	18	8.9	A
	EB T	230	28.1	C	CD Road	WB L/T/R	1039	70.0	E
	EB R	41	2.4	A	Old Wolf Road	NB L/T/R	232	42.9	D
Sand Creek Road	WB L	58	35.8	D	Old Wolf Road	SB L/T/R	237	243.3	F
	WB T	177	32.0	C	OVERALL		1525	92.1	F
	WB R	90	5.2	A	Exit 5 SB Ramps & Watervliet Shaker Road				
Wolf Road	NB L	138	42.9	D	Watervliet Shaker Road	EB L/TT/R	222	16.4	B
	NB TT	650	13.1	B	Watervliet Shaker Road	WB LT	993	18.8	B
	NB R	15	6.1	A	Exit 5 SB Off-Ramp	SB L	450	24.5	C
Wolf Road	SB L	23	47.9	D		SB T/R	234	13.8	B
	SB TT	498	19.7	B	Sherwood Drive	SB L/T/R	16	25.8	C
	SB R	194	9.8	A	OVERALL		1914	19.3	B
OVERALL		2209	20.4	C	Exit 5 NB Ramps & Watervliet Shaker Road				
Metro Park & Wolf Road					Watervliet Shaker Road	EB L	154	20.2	C
Hess Station	EB L/T/R	18	33.9	C		EB T/R	262	10.4	B
Metro Park Drive	WB L	30	42.9	D	Watervliet Shaker Road	WB L	9	10.7	B
	WB T/R	40	9.3	A		WB TT/R	876	12.2	B
Wolf Road	NB L	6	3.3	A	Holly Lane	NB L/T/R	8	30.7	C
	NB TT	626	2.0	A	Exit 5 NB Off-Ramp	SB L	179	23.3	C
	NB R	138	3.9	A		SB T/R	272	10.7	B
Wolf Road	SB L	11	4.5	A	OVERALL		1760	13.6	B
	SB TT/R	1223	2.9	A	Unsignalized Intersections				
OVERALL		2092	3.7	A					
Exit 4 NB Off-Ramp & Wolf Road					Intersection/Approach		Vehicles	Delay *	LOS
Exit 4 NB Off-Ramp	EB LL	557	56.4	E	Maxwell Road & Albany Shaker Road				
	EB R	191	16.6	B	Albany Shaker Road	EB L			
Wolf Road	NB TTT	648	11.6	B		SB L			
	SB TT	1167	9.1	A	Maxwell Road	SB R			
OVERALL		2563	20.5	C					
Albany Shaker Road & Wolf Road									
Albany Shaker Road	EB L	146	41.7	D					
	EB TT/R	687	23.0	C					
	EB R	892	12.7	B					
Albany Shaker Road	WB L	169	33.8	C					
	WB TT	561	22.2	C					
	WB R	183	5.2	A					
Wolf Road	NB L	387	51.4	D					
	NB L/TT	584	38.5	D					
	NB R	229	7.9	A					
OVERALL		3837	25.1	C					

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay:

243.4

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC) No Build - PM Peak Hour

Signalized Intersections					Signalized Intersections				
Intersection/Approach		Vehicles	Delay *	LOS	Intersection/Approach		Vehicles	Delay *	LOS
Central Avenue & Wolf Road					Albany Shaker Road & Old Wolf Road				
Central Avenue	EB LL	316	55.0	D	Albany Shaker Road	EB L	183	416.1	F
	EB TT	802	19.5	B		EB TT	729	330.6	F
Central Avenue	WB TTT	1343	43.6	D		EB R	648	242.7	F
	WB R	480	18.8	B	Albany Shaker Road	WB L	223	85.6	F
Exit 2 NB Off-Ramp	NB TTT	652	54.0	D		WB TT/R	1033	31.4	C
Wolf Road	SB LL	252	58.1	E	Old Wolf Road	SB LL/T	701	70.0	E
	SB RR	650	27.3	C		SB R	470	46.1	D
OVERALL		4496	37.4	D	OVERALL		3987	149.7	F
Sand Creek Road & Wolf Road					Old Wolf Road & CD Road				
Sand Creek Road	EB L	225	128.3	F	Site Driveway	EB L/T/R	8	6.3	A
	EB T	419	101.5	F	CD Road	WB L/T/R	784	27.0	C
	EB R	112	55.0	D	Old Wolf Road	NB L/T/R	311	14.2	B
Sand Creek Road	WB L	62	158.4	F	Old Wolf Road	SB L/T/R	413	27.5	C
	WB T	447	170.3	F	OVERALL		1516	24.4	C
	WB R	116	90.0	F	Exit 5 SB Ramps & Watervliet Shaker Road				
Wolf Road	NB L	232	68.4	E	Watervliet Shaker Road	EB L/TT/R	737	43.2	D
	NB TT	893	36.5	D	Watervliet Shaker Road	WB LT	641	22.8	C
	NB R	65	14.4	B	Exit 5 SB Off-Ramp	SB L	351	34.2	C
Wolf Road	SB L	178	66.3	E		SB T/R	301	22.0	C
	SB TT	849	36.8	D	Sherwood Drive	SB L/T/R	12	43.9	D
	SB R	208	19.0	B	OVERALL		2041	32.1	C
OVERALL		3805	71.0	E	Exit 5 NB Ramps & Watervliet Shaker Road				
Metro Park Drive & Wolf Road					Watervliet Shaker Road	EB L	468	27.0	C
Hess Station	EB L/T/R	74	40.6	D		EB T/R	549	10.0	B
Metro Park Drive	WB L	135	48.9	D	Watervliet Shaker Road	WB L	10	14.1	B
	WB T/R	12	38.1	D		WB TT/R	685	19.2	B
Wolf Road	NB L	9	25.0	C	Holly Lane	NB L/T/R	2	41.0	D
	NB TT	1578	28.8	C	Exit 5 NB Off-Ramp	SB L	366	31.0	C
	NB R	170	25.8	C		SB T/R	54	10.0	A
Wolf Road	SB L	35	11.7	B	OVERALL		2135	20.3	C
	SB TT/R	1162	5.2	A	Unsignalized Intersections				
OVERALL		3175	21.0	C	Intersection/Approach		Vehicles	Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road					Maxwell Road & Albany Shaker Road				
Exit 4 NB Off-Ramp	EB LL	479	80.5	F	Albany Shaker Road	EB L			
	EB R	134	7.6	A		SB L			
Wolf Road	NB TTT	1080	182.9	F	Maxwell Road	SB R			
	SB TT	588	6.4	A					
OVERALL		2280	105.6	F					
Albany Shaker Road & Wolf Road									
Albany Shaker Road	EB L	320	132.3	F					
	EB TT/R	575	27.0	C					
	EB R	453	10.1	B					
Albany Shaker Road	WB L	81	24.5	C					
	WB T T	620	36.8	D					
	WB R	338	33.2	C					
Wolf Road	NB L	417	67.4	E					
	NB L/TT	834	72.3	E					
	NB R	292	12.9	B					
OVERALL		3928	48.5	D					

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay:

623.5

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) No Build - AM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	43.9	D	Albany Shaker Road	EB L	49.7	D
	EB TT	21.4	C		EB TT	42.3	D
Central Avenue	WB TTT	39.1	D		EB R	28.2	C
	WB R	9.3	A	Albany Shaker Road	WB L	28.0	C
Exit 2 NB Off-Ramp	NB TTT	42.0	D		WB TT/R	42.0	D
Wolf Road	SB LL	46.9	D	Old Wolf Road	SB LL/T	83.9	F
	SB RR	7.3	A		SB R	72.1	E
OVERALL		30.4	C	OVERALL		53.7	D
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	34.4	C	Site Driveway	EB L/T/R	9.4	A
	EB T	30.5	C	CD Road	WB L/T/R	69.3	E
	EB R	2.7	A	Old Wolf Road	NB L/T/R	44.8	D
Sand Creek Road	WB L	35.4	D	Old Wolf Road	SB L/T/R	328.7	F
	WB T	32.8	C	OVERALL		115.2	F
	WB R	5.9	A	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	46.4	D	Watervliet Shaker Road	EB L/TT/R	17.6	B
	NB TT	15.2	B	Watervliet Shaker Road	WB LT	18.3	B
	NB R	8.0	A	Exit 5 SB Off-Ramp	SB L	26.3	C
Wolf Road	SB L	45.6	D		SB T/R	17.1	B
	SB TT	22.0	C	Sherwood Drive	SB L/T/R	26.5	C
	SB R	10.0	B	OVERALL		19.6	B
OVERALL		22.5	C	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park & Wolf Road				Watervliet Shaker Road	EB L	24.2	C
Hess Station	EB L/T/R	30.2	C		EB T/R	10.0	A
Metro Park Drive	WB L	44.9	D	Watervliet Shaker Road	WB L	13.0	B
	WB T/R	9.1	A		WB TT/R	15.1	B
Wolf Road	NB L	3.1	A	Holly Lane	NB L/T/R	38.7	D
	NB TT	2.1	A	Exit 5 NB Off-Ramp	SB L	25.4	C
	NB R	4.1	A		SB T/R	12.1	B
Wolf Road	SB L	3.2	A	OVERALL		15.8	B
	SB TT/R	2.6	A	Unsignalized Intersections			
OVERALL		3.7	A	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	59.9	E	Albany Shaker Road	EB L		
	EB R	17.2	B		SB L		
Wolf Road	NB TTT	13.2	B	Maxwell Road	SB R		
	SB TT	9.3	A				
OVERALL		22.6	C				
Albany Shaker Road & Wolf Road							
Albany Shaker Road	EB L	39.8	D				
	EB TT/R	22.9	C				
	EB R	12.0	B				
Albany Shaker Road	WB L	24.3	C				
	WB TT	21.3	C				
	WB R	3.4	A				
Wolf Road	NB L	49.8	D				
	NB L/TT	38.2	D				
	NB R	8.6	A				
OVERALL		24.4	C				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay: 274.4

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) No Build - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	58.0	E	Albany Shaker Road	EB L	518.3	F
	EB TT	21.0	C		EB TT	459.7	F
Central Avenue	WB TTT	42.7	D		EB R	447.0	F
	WB R	25.3	C	Albany Shaker Road	WB L	88.7	F
Exit 2 NB Off-Ramp	NB TTT	56.5	E		WB TT/R	33.8	C
Wolf Road	SB LL	64.8	E	Old Wolf Road	SB LL/T	72.3	E
	SB RR	30.5	C		SB R	48.0	D
OVERALL		39.3	D	OVERALL		212.1	F
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	142.4	F	Site Driveway	EB L/T/R	6.3	A
	EB T	124.3	F	CD Road	WB L/T/R	37.5	D
	EB R	74.7	E	Old Wolf Road	NB L/T/R	15.9	B
Sand Creek Road	WB L	190.3	F	Old Wolf Road	SB L/T/R	28.7	C
	WB T	203.3	F	OVERALL		30.7	C
	WB R	120.4	F	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	70.9	E	Watervliet Shaker Road	EB L/TT/R	63.3	E
	NB TT	39.4	D	Watervliet Shaker Road	WB LT	25.9	C
	NB R	18.5	B	Exit 5 SB Off-Ramp	SB L	36.1	D
Wolf Road	SB L	66.7	E		SB T/R	28.0	C
	SB TT	37.9	D	Sherwood Drive	SB L/T/R	56.0	E
	SB R	21.1	C	OVERALL		41.5	D
OVERALL		78.6	E	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park Drive & Wolf Road				Watervliet Shaker Road	EB L	30.4	C
Hess Station	EB L/T/R	45.4	D		EB T/R	10.8	B
Metro Park Drive	WB L	54.0	D	Watervliet Shaker Road	WB L	18.9	B
	WB T/R	39.0	D		WB TT/R	21.5	C
Wolf Road	NB L	54.2	D	Holly Lane	NB L/T/R	39.5	D
	NB TT	43.8	D	Exit 5 NB Off-Ramp	SB L	32.5	C
	NB R	32.4	C		SB T/R	10.9	B
Wolf Road	SB L	12.1	B	OVERALL		22.2	C
	SB TT/R	4.5	A	Unsignalized Intersections			
OVERALL		29.5	C	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	99.3	F	Albany Shaker Road	EB L		
	EB R	10.1	B		SB L		
Wolf Road	NB TTT	198.5	F	Maxwell Road	SB R		
	SB TT	5.7	A				
OVERALL		115.2	F				
Albany Shaker Road & Wolf Road				Overall Network Vehicle Hours of Delay:			
Albany Shaker Road	EB L	111.8	F				
	EB TT/R	29.2	C				
	EB R	11.1	B				
Albany Shaker Road	WB L	28.2	C				
	WB T T	38.6	D				
	WB R	34.8	C				
Wolf Road	NB L	55.3	E				
	NB L/TT	70.8	E				
	NB R	12.0	B				
OVERALL		44.8	D				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) No Build - AM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	42.4	D	Albany Shaker Road	EB L	64.3	E
	EB TT	21.9	C		EB TT	53.3	D
Central Avenue	WB TTT	39.1	D		EB R	49.8	D
	WB R	9.6	A	Albany Shaker Road	WB L	26.7	C
Exit 2 NB Off-Ramp	NB TTT	42.1	D		WB TT/R	42.1	D
Wolf Road	SB LL	47.1	D	Old Wolf Road	SB LL/T	89.3	F
	SB RR	8.1	A		SB R	76.5	E
OVERALL		30.5	C	OVERALL		58.7	E
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	34.1	C	Site Driveway	EB L/T/R	9.4	A
	EB T	31.0	C	CD Road	WB L/T/R	82.1	F
	EB R	2.6	A	Old Wolf Road	NB L/T/R	51.9	D
Sand Creek Road	WB L	37.2	D	Old Wolf Road	SB L/T/R	422.5	F
	WB T	34.8	C	OVERALL		135.5	F
	WB R	5.5	A	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	45.3	D	Watervliet Shaker Road	EB L/TT/R	17.8	B
	NB TT	15.2	B	Watervliet Shaker Road	WB LT	18.4	B
	NB R	7.5	A	Exit 5 SB Off-Ramp	SB L	25.2	C
Wolf Road	SB L	51.7	D		SB T/R	17.3	B
	SB TT	23.4	C	Sherwood Drive	SB L/T/R	22.6	C
	SB R	11.6	B	OVERALL		19.5	B
OVERALL		23.2	C	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park & Wolf Road				Watervliet Shaker Road	EB L	26.4	C
Hess Station	EB L/T/R	32.4	C		EB T/R	11.1	B
Metro Park Drive	WB L	42.2	D	Watervliet Shaker Road	WB L	15.0	B
	WB T/R	9.8	A		WB TT/R	16.7	B
Wolf Road	NB L	3.8	A	Holly Lane	NB L/T/R	36.3	D
	NB TT	2.3	A	Exit 5 NB Off-Ramp	SB L	26.5	C
	NB R	4.4	A		SB T/R	13.0	B
Wolf Road	SB L	7.9	A	OVERALL		17.3	B
	SB TT/R	3.0	A	Unsignalized Intersections			
OVERALL		4.1	A	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	104.5	F	Albany Shaker Road	EB L		
	EB R	49.6	D		SB L		
Wolf Road	NB TTT	18.5	B	Maxwell Road	SB R		
	SB TT	9.1	A				
OVERALL		38.5	D				
Albany Shaker Road & Wolf Road							
Albany Shaker Road	EB L	32.8	C				
	EB TT/R	23.2	C				
	EB R	12.7	B				
Albany Shaker Road	WB L	28.8	C				
	WB TT	23.4	C				
	WB R	5.5	A				
Wolf Road	NB L	51.2	D				
	NB L/TT	44.5	D				
	NB R	8.5	A				
OVERALL		25.5	C				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

Overall Network Vehicle Hours of Delay: 341.8

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) No Build - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	56.5	E	Albany Shaker Road	EB L	469.8	F
	EB TT	20.6	C		EB TT	424.4	F
Central Avenue	WB TTT	42.0	D		EB R	500.6	F
	WB R	23.7	C	Albany Shaker Road	WB L	96.1	F
Exit 2 NB Off-Ramp	NB TTT	55.9	E		WB TT/R	41.8	D
Wolf Road	SB LL	65.7	E	Old Wolf Road	SB LL/T	95.5	F
	SB RR	33.1	C		SB R	73.8	E
OVERALL		39.2	D	OVERALL		214.6	F
Sand Creek Road & Wolf Road				Old Wolf Road & CD Road			
Sand Creek Road	EB L	171.0	F	Site Driveway	EB L/T/R	6.4	A
	EB T	143.1	F	CD Road	WB L/T/R	205.3	F
	EB R	87.9	F	Old Wolf Road	NB L/T/R	24.1	C
Sand Creek Road	WB L	204.9	F	Old Wolf Road	SB L/T/R	104.6	F
	WB T	221.2	F	OVERALL		136.3	F
	WB R	131.9	F	Exit 5 SB Ramps & Watervliet Shaker Road			
Wolf Road	NB L	92.6	F	Watervliet Shaker Road	EB L/TT/R	69.3	E
	NB TT	64.6	E	Watervliet Shaker Road	WB LT	25.1	C
	NB R	44.8	D	Exit 5 SB Off-Ramp	SB L	41.3	D
Wolf Road	SB L	74.1	E		SB T/R	39.6	D
	SB TT	42.2	D	Sherwood Drive	SB L/T/R	52.5	D
	SB R	27.4	C	OVERALL		45.9	D
OVERALL		91.8	F	Exit 5 NB Ramps & Watervliet Shaker Road			
Metro Park Drive & Wolf Road				Watervliet Shaker Road	EB L	31.4	C
Hess Station	EB L/T/R	46.9	D		EB T/R	11.4	B
Metro Park Drive	WB L	52.5	D	Watervliet Shaker Road	WB L	18.1	B
	WB T/R	41.2	D		WB TT/R	21.0	C
Wolf Road	NB L	171.3	F	Holly Lane	NB L/T/R	36.7	D
	NB TT	157.6	F	Exit 5 NB Off-Ramp	SB L	32.7	C
	NB R	123.5	F		SB T/R	10.4	B
Wolf Road	SB L	13.6	B	OVERALL		22.3	C
	SB TT/R	4.9	A	Unsignalized Intersections			
OVERALL		80.5	F	Intersection/Approach		Delay *	LOS
Exit 4 NB Off-Ramp & Wolf Road				Maxwell Road & Albany Shaker Road			
Exit 4 NB Off-Ramp	EB LL	137.7	F	Albany Shaker Road	EB L		
	EB R	25.9	C		SB L		
Wolf Road	NB TTT	339.6	F	Maxwell Road	SB R		
	SB TT	5.9	A				
OVERALL		169.6	F	Overall Network Vehicle Hours of Delay:			
Albany Shaker Road & Wolf Road							
Albany Shaker Road	EB L	95.4	F				
	EB TT/R	36.3	D				
	EB R	14.7	B				
Albany Shaker Road	WB L	35.0	D				
	WB TT	44.0	D				
	WB R	29.3	C				
Wolf Road	NB L	61.0	E				
	NB L/TT	55.3	E				
	NB R	10.2	B				
OVERALL		43.0	D				

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) AM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	42.1	D	Albany Shaker Road	EB L	18.2	B
	EB TT	19.7	B		EB TT	15.6	B
Central Avenue	WB TTT	38.4	D	Albany Shaker Road	WB TT/R	13.5	B
	WB R	8.5	A		Old Wolf Road	SB LL	29.4
Exit 2 NB Off-Ramp	NB TTT	42.5	D			SB R	21.7
Wolf Road	SB LL	47.8	D		OVERALL		18.0
	SB RR	5.4	A	Old Wolf Road & CD Road			
OVERALL		29.2	C	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	29.9	C	Old Wolf Road	NB L/T/R		
	EB T	25.6	C	Old Wolf Road	SB L/T/R		
	EB R	2.3	A	OVERALL			
Sand Creek Road	WB L	35.2	D	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	31.8	C	Watervliet Shaker Road	EB L/TT/R	17.1	B
	WB R	5.2	A	Watervliet Shaker Road	WB LT	24.5	C
Wolf Road	NB L	39.5	D	Exit 5 SB Off-Ramp	SB L	22.7	C
	NB TT	14.2	B		SB T/R	24.3	C
	NB R	5.7	A	Sherwood Drive	SB L/T/R	26.4	C
Wolf Road	SB L	43.1	D	OVERALL		23.1	C
	SB TT	16.4	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	6.3	A	Watervliet Shaker Road	EB L	20.0	C
OVERALL		19.0	B		EB T/R	10.0	A
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	9.9	A
Hess Station	EB L/T/R	36.7	D	Watervliet Shaker Road	WB TT/R	10.6	B
Metro Park Drive	WB L	45.6	D	Holly Lane	NB L/T/R	28.2	C
	WB T/R	8.7	A	Exit 5 NB Off-Ramp	SB L	21.4	C
Wolf Road	NB L	4.4	A		SB T/R	9.3	A
	NB TT	2.5	A	OVERALL		12.3	B
	NB R	4.1	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	3.3	A	Albany Shaker Road	EB TT	18.6	B
	SB TT/R	1.5	A		EB R	6.0	A
OVERALL		3.5	A	Albany Shaker Road	WB L	41.4	D
Exit 4 NB Off-Ramp & Wolf Road					WB TT	6.6	A
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	22.7	C
	EB R				NB R	11.0	B
Wolf Road	NB TTT			OVERALL		15.2	B
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	51.1	D	Exit 4 NB Off-Ramp	EB R	14.8	B
	EB TT/R	7.0	A	Intersection/Approach			
	EB R	5.9	A	Intersection/Approach		Delay *	LOS
Albany Shaker Road	WB L	20.0	B	Maxwell Road & Albany Shaker Road			
	WB T T	10.8	B	Albany Shaker Road	EB L		
	WB R	5.0	A		SB L		
Wolf Road	NB L	28.0	C	Maxwell Road	SB R		
	NB L/TT	26.7	C				
	NB R	2.1	A	Overall Network Vehicle Hours of Delay:			
OVERALL		12.9	B	Total Distance Traveled:		148.5	
						55046.1	

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) PM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	58.0	E	Albany Shaker Road	EB L	20.8	C
	EB TT	19.8	B		EB TT	17.7	B
Central Avenue	WB TTT	54.4	D	Albany Shaker Road	WB TT/R	9.2	A
	WB R	29.2	C		Old Wolf Road	SB LL	31.7
Exit 2 NB Off-Ramp	NB TTT	54.8	D	SB R		17.8	B
Wolf Road	SB LL	62.8	E	OVERALL		18.9	B
	SB RR	30.1	C	Old Wolf Road & CD Road			
OVERALL		43.4	D	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	128.3	F	Old Wolf Road	NB L/T/R		
	EB T	107.7	F	Old Wolf Road	SB L/T/R		
	EB R	61.3	E	OVERALL			
Sand Creek Road	WB L	154.1	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	169.3	F	Watervliet Shaker Road	EB L/TT/R	42.6	D
	WB R	86.0	F	Watervliet Shaker Road	WB LT	23.9	C
Wolf Road	NB L	67.3	E	Exit 5 SB Off-Ramp	SB L	36.2	D
	NB TT	34.4	C		SB T/R	6.2	A
	NB R	14.3	B	Sherwood Drive	SB L/T/R	45.6	D
Wolf Road	SB L	66.2	E	OVERALL		33.0	C
	SB TT	38.0	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	22.2	C	Watervliet Shaker Road	EB L	31.4	C
OVERALL		71.1	E		EB T/R	12.5	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	18.9	B
Hess Station	EB L/T/R	36.3	D		WB TT/R	21.0	C
Metro Park Drive	WB L	45.1	D	Holly Lane	NB L/T/R	32.2	C
	WB T/R	22.0	C	Exit 5 NB Off-Ramp	SB L	34.1	C
Wolf Road	NB L	7.3	A		SB T/R	10.2	B
	NB TT	6.4	A	OVERALL		23.2	C
	NB R	5.5	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	8.1	A	Albany Shaker Road	EB TT	26.8	C
	SB TT/R	4.0	A		EB R	9.5	A
OVERALL		8.4	A	Albany Shaker Road	WB L	64.3	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	10.9	B
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	22.8	C
	EB R				NB R	8.9	A
Wolf Road	NB TTT			OVERALL		18.5	B
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	51.3	D	Exit 4 NB Off-Ramp	EB R	5.7	A
	EB TT/R	10.0	B	Intersection/Approach		Delay *	LOS
	EB R	5.5	A	Maxwell Road & Albany Shaker Road			
Albany Shaker Road	WB L	25.0	C	Albany Shaker Road	EB L		
	WB T T	19.5	B		SB L		
	WB R	15.4	B	Maxwell Road	SB R		
Wolf Road	NB L	23.4	C				
	NB L/TT	26.5	C				
	NB R	3.6	A				
OVERALL		19.5	B	Overall Network Vehicle Hours of Delay: 299.6			
				Total Distance Traveled: 62813.6			

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) AM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	44.6	D	Albany Shaker Road	EB L	18.3	B
	EB TT	21.1	C		EB TT	15.5	B
Central Avenue	WB TTT	40.2	D	Albany Shaker Road	WB TT/R	13.7	B
	WB R	9.2	A		Old Wolf Road	SB LL	28.6
Exit 2 NB Off-Ramp	NB TTT	43.7	D	SB R		21.9	C
Wolf Road	SB LL	50.0	D	OVERALL		17.8	B
	SB RR	6.5	A	Old Wolf Road & CD Road			
OVERALL		31.2	C	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	33.7	C	Old Wolf Road	NB L/T/R		
	EB T	27.9	C	Old Wolf Road	SB L/T/R		
	EB R	2.5	A	OVERALL			
Sand Creek Road	WB L	35.6	D	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	32.5	C	Watervliet Shaker Road	EB L/TT/R	17.7	B
	WB R	5.5	A	Watervliet Shaker Road	WB LT	21.6	C
Wolf Road	NB L	43.4	D	Exit 5 SB Off-Ramp	SB L	24.6	C
	NB TT	14.5	B		SB T/R	18.3	B
	NB R	7.0	A	Sherwood Drive	SB L/T/R	28.2	C
Wolf Road	SB L	44.8	D	OVERALL		21.1	C
	SB TT	18.3	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	7.0	A	Watervliet Shaker Road	EB L	23.2	C
OVERALL		20.3	C	EB T/R	10.4	B	
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	11.7	B
Hess Station	EB L/T/R	37.8	D		WB TT/R	12.8	B
Metro Park Drive	WB L	51.4	D	Holly Lane	NB L/T/R	32.1	C
	WB T/R	8.6	A	Exit 5 NB Off-Ramp	SB L	24.1	C
Wolf Road	NB L	3.0	A		SB T/R	10.1	B
	NB TT	2.3	A	OVERALL		14.2	B
	NB R	4.2	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	3.1	A	Albany Shaker Road	EB TT	23.1	C
	SB TT/R	1.6	A		EB R	11.8	B
OVERALL		3.5	A	Albany Shaker Road	WB L	50.0	D
Exit 4 NB Off-Ramp & Wolf Road					WB TT	7.4	A
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	20.6	C
	EB R				NB R	11.8	B
Wolf Road	NB TTT			OVERALL		17.0	B
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	48.4	D	Exit 4 NB Off-Ramp	EB R	20.3	C
	EB TT/R	6.9	A	Intersection/Approach		Delay *	LOS
	EB R	7.0	A	Maxwell Road & Albany Shaker Road			
Albany Shaker Road	WB L	22.6	C	Albany Shaker Road	EB L		
	WB T T	12.2	B		SB L		
	WB R	5.2	A	Maxwell Road	SB R		
Wolf Road	NB L	27.9	C				
	NB L/TT	27.2	C				
	NB R	2.3	A				
OVERALL		13.2	B	Overall Network Vehicle Hours of Delay: 167.6			
				Total Distance Traveled: 56229			

Overall Network Vehicle Hours of Delay: 167.8
Total Distance Traveled: 56223.1

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) PM Peak Hour
Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	57.7	E	Albany Shaker Road	EB L	22.4	C
	EB TT	19.8	B		EB TT	17.6	B
Central Avenue	WB TTT	56.4	E	Albany Shaker Road	WB TT/R	10.8	B
	WB R	31.5	C		Old Wolf Road	SB LL	35.5
Exit 2 NB Off-Ramp	NB TTT	55.3	E	SB R		19.9	B
Wolf Road	SB LL	65.1	E	OVERALL		20.1	C
	SB RR	33.1	C	Old Wolf Road & CD Road			
OVERALL		44.7	D	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	137.4	F	Old Wolf Road	NB L/T/R		
	EB T	121.1	F	Old Wolf Road	SB L/T/R		
	EB R	72.0	E	OVERALL			
Sand Creek Road	WB L	170.5	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	186.6	F	Watervliet Shaker Road	EB L/TT/R	50.5	D
	WB R	102.9	F	Watervliet Shaker Road	WB LT	27.3	C
Wolf Road	NB L	66.7	E	Exit 5 SB Off-Ramp	SB L	38.1	D
	NB TT	36.3	D		SB T/R	7.2	A
	NB R	14.6	B	Sherwood Drive	SB L/T/R	44.4	D
Wolf Road	SB L	73.9	E	OVERALL		37.8	D
	SB TT	42.4	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	28.6	C	Watervliet Shaker Road	EB L	33.7	C
OVERALL		77.1	E		EB T/R	13.9	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	18.2	B
Hess Station	EB L/T/R	38.7	D	Watervliet Shaker Road	WB TT/R	23.1	C
Metro Park Drive	WB L	46.0	D	Holly Lane	NB L/T/R	50.8	D
	WB T/R	23.4	C	Exit 5 NB Off-Ramp	SB L	35.7	D
Wolf Road	NB L	10.8	B		SB T/R	12.4	B
	NB TT	7.5	A	OVERALL		25.0	C
	NB R	5.7	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	8.3	A	Albany Shaker Road	EB TT	30.8	C
	SB TT/R	4.1	A		EB R	10.1	B
OVERALL		9.2	A	Albany Shaker Road	WB L	68.3	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	9.9	A
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	23.8	C
	EB R				NB R	9.7	A
Wolf Road	NB TTT			OVERALL		19.7	B
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	61.8	E	Exit 4 NB Off-Ramp	EB R	6.0	A
	EB TT/R	10.1	B	Intersection/Approach		Delay *	LOS
	EB R	5.5	A	Maxwell Road & Albany Shaker Road			
Albany Shaker Road	WB L	27.1	C	Albany Shaker Road	EB L		
	WB T T	21.8	C		SB L		
	WB R	20.0	B	Maxwell Road	SB R		
Wolf Road	NB L	24.4	C				
	NB L/TT	29.8	C				
	NB R	3.6	A				
OVERALL		22.2	C	Overall Network Vehicle Hours of Delay: 331.6			
				Total Distance Traveled: 64299.5			

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) AM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	46.4	D	Albany Shaker Road	EB L	16.8	B
	EB TT	23.1	C		EB TT	7.4	A
Central Avenue	WB TTT	41.7	D	Albany Shaker Road	WB TT/R	12.8	B
	WB R	9.2	A		Old Wolf Road	SB LL	31.6
Exit 2 NB Off-Ramp	NB TTT	46.2	D	SB R		24.5	C
Wolf Road	SB LL	53.3	D	OVERALL		14.1	B
	SB RR	7.5	A	Old Wolf Road & CD Road			
OVERALL		33.6	C	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	34.9	C	Old Wolf Road	NB L/T/R		
	EB T	29.6	C	Old Wolf Road	SB L/T/R		
	EB R	2.8	A	OVERALL			
Sand Creek Road	WB L	35.2	D	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	34.0	C	Watervliet Shaker Road	EB L/TT/R	22.6	C
	WB R	5.5	A	Watervliet Shaker Road	WB LT	21.7	C
Wolf Road	NB L	45.2	D	Exit 5 SB Off-Ramp	SB L	28.3	C
	NB TT	16.6	B		SB T/R	17.2	B
	NB R	6.6	A	Sherwood Drive	SB L/T/R	26.5	C
Wolf Road	SB L	47.0	D	OVERALL		22.5	C
	SB TT	19.7	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	7.4	A	Watervliet Shaker Road	EB L	26.1	C
OVERALL		21.8	C		EB T/R	10.4	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	10.9	B
Hess Station	EB L/T/R	40.9	D		WB TT/R	15.8	B
Metro Park Drive	WB L	48.7	D	Holly Lane	NB L/T/R	32.8	C
	WB T/R	9.0	A	Exit 5 NB Off-Ramp	SB L	27.8	C
Wolf Road	NB L	4.7	A		SB T/R	11.5	B
	NB TT	2.7	A	OVERALL		16.7	B
	NB R	4.5	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	4.0	A	Albany Shaker Road	EB TT	27.3	C
	SB TT/R	1.7	A		EB R	11.9	B
OVERALL		3.7	A	Albany Shaker Road	WB L	61.9	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	11.3	B
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	21.7	C
	EB R				NB R	15.8	B
Wolf Road	NB TTT			OVERALL		20.0	C
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	33.7	C	Exit 4 NB Off-Ramp	EB R	28.2	C
	EB TT/R	9.0	A	Intersection/Approach			
	EB R	7.1	A	Intersection/Approach		Delay *	LOS
Albany Shaker Road	WB L	23.8	C	Maxwell Road & Albany Shaker Road			
	WB T T	11.4	B	Albany Shaker Road	EB L		
	WB R	5.2	A		SB L		
Wolf Road	NB L	32.3	C	Maxwell Road	SB R		
	NB L/TT	30.7	C				
	NB R	2.4	A	Overall Network Vehicle Hours of Delay:			
OVERALL		13.5	B	Total Distance Traveled:		194.9	
						57478.7	

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) PM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	59.0	E	Albany Shaker Road	EB L	23.6	C
	EB TT	21.3	C		EB TT	9.1	A
Central Avenue	WB TTT	58.9	E	Albany Shaker Road	WB TT/R	8.4	A
	WB R	33.3	C		Old Wolf Road	SB LL	52.6
Exit 2 NB Off-Ramp	NB TTT	58.3	E	SB R		26.6	C
Wolf Road	SB LL	67.5	E	OVERALL		19.1	B
	SB RR	36.3	D	Old Wolf Road & CD Road			
OVERALL		46.9	D	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	142.2	F	Old Wolf Road	NB L/T/R		
	EB T	130.9	F	Old Wolf Road	SB L/T/R		
	EB R	81.3	F	OVERALL			
Sand Creek Road	WB L	189.1	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	206.9	F	Watervliet Shaker Road	EB L/TT/R	64.2	E
	WB R	118.5	F	Watervliet Shaker Road	WB LT	29.3	C
Wolf Road	NB L	70.0	E	Exit 5 SB Off-Ramp	SB L	40.2	D
	NB TT	37.8	D		SB T/R	8.7	A
	NB R	15.9	B	Sherwood Drive	SB L/T/R	49.1	D
Wolf Road	SB L	81.2	F	OVERALL		43.6	D
	SB TT	50.5	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	37.1	D	Watervliet Shaker Road	EB L	34.7	C
OVERALL		83.1	F		EB T/R	12.2	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	18.3	B
Hess Station	EB L/T/R	37.1	D		WB TT/R	23.6	C
Metro Park Drive	WB L	45.1	D	Holly Lane	NB L/T/R	45.4	D
	WB T/R	19.8	B	Exit 5 NB Off-Ramp	SB L	36.0	D
Wolf Road	NB L	9.2	A		SB T/R	14.2	B
	NB TT	7.5	A	OVERALL		25.0	C
	NB R	5.8	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	10.0	A	Albany Shaker Road	EB TT	36.4	D
	SB TT/R	4.0	A		EB R	10.6	B
OVERALL		9.1	A	Albany Shaker Road	WB L	73.1	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	13.5	B
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	27.0	C
	EB R				NB R	14.0	B
Wolf Road	NB TTT			OVERALL		22.7	C
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	52.0	D	Exit 4 NB Off-Ramp	EB R	6.0	A
	EB TT/R	12.1	B	Intersection/Approach		Delay *	LOS
	EB R	6.1	A	Maxwell Road & Albany Shaker Road			
Albany Shaker Road	WB L	25.6	C	Albany Shaker Road	EB L		
	WB T T	20.7	C		SB L		
	WB R	17.6	B	Maxwell Road	SB R		
Wolf Road	NB L	33.9	C				
	NB L/TT	46.0	D				
	NB R	3.7	A				
OVERALL		24.2	C	Overall Network Vehicle Hours of Delay: 372.0			
				Total Distance Traveled: 66143			

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2046 (ETC+30) AM Peak Hour
Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	45.8	D	Albany Shaker Road	EB L	20.2	C
	EB TT	22.3	C		EB TT	14.9	B
Central Avenue	WB TTT	42.3	D	Albany Shaker Road	WB TT/R	14.1	B
	WB R	9.5	A		Old Wolf Road	SB LL	32.1
Exit 2 NB Off-Ramp	NB TTT	46.3	D	SB R		24.1	C
Wolf Road	SB LL	54.6	D	OVERALL		18.3	B
	SB RR	7.7	A	Old Wolf Road & CD Road			
OVERALL		33.6	C	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	34.6	C	Old Wolf Road	NB L/T/R		
	EB T	30.6	C	Old Wolf Road	SB L/T/R		
	EB R	2.9	A	OVERALL			
Sand Creek Road	WB L	37.7	D	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	35.3	D	Watervliet Shaker Road	EB L/TT/R	22.1	C
	WB R	5.4	A	Watervliet Shaker Road	WB LT	21.9	C
Wolf Road	NB L	45.5	D	Exit 5 SB Off-Ramp	SB L	27.7	C
	NB TT	16.5	B		SB T/R	17.0	B
	NB R	7.4	A	Sherwood Drive	SB L/T/R	27.9	C
Wolf Road	SB L	47.6	D	OVERALL		22.4	C
	SB TT	19.5	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	7.9	A	Watervliet Shaker Road	EB L	26.9	C
OVERALL		22.0	C		EB T/R	10.3	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	12.7	B
Hess Station	EB L/T/R	40.7	D		WB TT/R	15.4	B
Metro Park Drive	WB L	53.5	D	Holly Lane	NB L/T/R	33.2	C
	WB T/R	10.1	B	Exit 5 NB Off-Ramp	SB L	26.2	C
Wolf Road	NB L	5.1	A		SB T/R	10.9	B
	NB TT	2.7	A	OVERALL		16.3	B
	NB R	4.7	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	3.0	A	Albany Shaker Road	EB TT	28.0	C
	SB TT/R	1.6	A		EB R	7.4	A
OVERALL		3.7	A	Albany Shaker Road	WB L	78.4	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	9.7	A
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	21.3	C
	EB R				NB R	16.5	B
Wolf Road	NB TTT			OVERALL		20.2	C
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	49.2	D	Exit 4 NB Off-Ramp	EB R	81.9	F
	EB TT/R	9.2	A	Intersection/Approach			
	EB R	8.3	A	Intersection/Approach		Delay *	LOS
Albany Shaker Road	WB L	24.9	C	Maxwell Road & Albany Shaker Road			
	WB T T	11.8	B	Albany Shaker Road	EB L		
	WB R	5.5	A		SB L		
Wolf Road	NB L	31.4	C	Maxwell Road	SB R		
	NB L/TT	30.0	C				
	NB R	2.6	A	Overall Network Vehicle Hours of Delay: 199.0			
OVERALL		14.5	B	Total Distance Traveled: 58563.4			

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2046 (ETC+30) PM Peak Hour

Flyover w/out SB Off-Ramps to Old Wolf Road & Wolf Road: Sub-Alternative

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	59.8	E	Albany Shaker Road	EB L	24.8	C
	EB TT	21.5	C		EB TT	12.0	B
Central Avenue	WB TTT	58.1	E	Albany Shaker Road	WB TT/R	7.4	A
	WB R	33.4	C		SB LL	48.5	D
Exit 2 NB Off-Ramp	NB TTT	56.5	E	Old Wolf Road	SB R	26.5	C
Wolf Road	SB LL	65.8	E		OVERALL		19.2
	SB RR	38.0	D	Old Wolf Road & CD Road			
OVERALL		46.7	D	Site Driveway	EB L/T/R		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R		
Sand Creek Road	EB L	155.4	F	Old Wolf Road	NB L/T/R		
	EB T	138.1	F	Old Wolf Road	SB L/T/R		
	EB R	87.0	F	OVERALL			
Sand Creek Road	WB L	199.9	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	214.9	F	Watervliet Shaker Road	EB L/TT/R	64.6	E
	WB R	124.5	F	Watervliet Shaker Road	WB LT	29.0	C
Wolf Road	NB L	72.1	E	Exit 5 SB Off-Ramp	SB L	40.5	D
	NB TT	37.9	D		SB T/R	8.9	A
	NB R	17.6	B	Sherwood Drive	SB L/T/R	49.5	D
Wolf Road	SB L	87.1	F	OVERALL		43.8	D
	SB TT	56.3	E	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	45.2	D	Watervliet Shaker Road	EB L	36.1	D
OVERALL		87.4	F	Watervliet Shaker Road	EB T/R	12.4	B
Metro Park Drive & Wolf Road				Watervliet Shaker Road	WB L	15.9	B
Hess Station	EB L/T/R	39.4	D	Watervliet Shaker Road	WB TT/R	24.2	C
Metro Park Drive	WB L	45.8	D	Holly Lane	NB L/T/R	46.8	D
	WB T/R	21.5	C	Exit 5 NB Off-Ramp	SB L	36.0	D
Wolf Road	NB L	7.0	A	Exit 5 NB Off-Ramp	SB T/R	13.1	B
	NB TT	7.2	A	OVERALL		25.5	C
	NB R	5.5	A	New Exit 4 Ramps & Albany Shaker Road			
Wolf Road	SB L	10.5	B	Albany Shaker Road	EB TT	39.5	D
	SB TT/R	3.9	A		EB R	11.3	B
OVERALL		8.9	A	Albany Shaker Road	WB L	78.2	E
Exit 4 NB Off-Ramp & Wolf Road					WB TT	12.5	B
Exit 4 NB Off-Ramp	EB LL			New Exit 4 Ramps	NB LL	32.0	C
	EB R				NB R	24.6	C
Wolf Road	NB TTT			OVERALL		26.5	C
	SB TT			Unsignalized Intersections			
OVERALL				Intersection/Approach		Delay *	LOS
Albany Shaker Road & Wolf Road				Exit 4 NB Off-Ramp & Wolf Road			
Albany Shaker Road	EB LL	82.5	F	Exit 4 NB Off-Ramp	EB R	7.4	A
	EB TT/R	12.6	B	Intersection/Approach		Delay *	LOS
	EB R	6.8	A	Maxwell Road & Albany Shaker Road			
Albany Shaker Road	WB L	31.8	C	Albany Shaker Road	EB L		
	WB T T	26.0	C		SB L		
	WB R	32.6	C	Maxwell Road	SB R		
Wolf Road	NB L	30.4	C				
	NB L/TT	53.1	D				
	NB R	3.3	A				
OVERALL		31.0	C	Overall Network Vehicle Hours of Delay: 416.8			
				Total Distance Traveled: 67219.8			

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2016 (ETC) Diamond Alternative - AM Peak Hour

Signalized Intersections				Signalized Intersections					
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS		
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road					
Central Avenue	EB LL	39.2	D	Albany Shaker Road	EB L	16.4	B		
	EB TT	19.4	B		EB TT	5.7	A		
Central Avenue	WB TTT	37.1	D	Albany Shaker Road	WB TT/R	12.9	B		
	WB R	8.0	A		Old Wolf Road	SB LL	30.4	C	
Exit 2 NB Off-Ramp	NB TTT	39.4	D	SB R		27.6	C		
Wolf Road	SB LL	45.1	D	OVERALL			19.7	B	
	SB RR	6.6	A	Old Wolf Road & CD Road					
OVERALL				Site Driveway	EB L/T/R	8.1	A		
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	12.8	B		
Sand Creek Road	EB L	30.3	C	Old Wolf Road	NB L/T/R	19.5	B		
	EB T	26.2	C	Old Wolf Road	SB L/T/R	16.9	B		
	EB R	2.8	A	OVERALL			14.6	B	
Sand Creek Road	WB L	33.2	C	Exit 5 SB Ramps & Watervliet Shaker Road					
	WB T	29.1	C	Watervliet Shaker Road	EB L/TT/R	22.1	C		
	WB R	5.0	A	Watervliet Shaker Road	WB LT	19.2	B		
Wolf Road	NB L	41.6	D	Exit 5 SB Off-Ramp	SB L	29.1	C		
	NB TT	14.9	B		SB T/R	14.4	B		
	NB R	8.2	A	Sherwood Drive	SB L/T/R	25.8	C		
Wolf Road	SB L	43.3	D	OVERALL			21.1	C	
	SB TT	16.5	B	Exit 5 NB Ramps & Watervliet Shaker Road					
	SB R	9.6	A	Watervliet Shaker Road	EB L	26.7	C		
OVERALL				EB T/R	10.9	B			
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	18.5	B		
Airport Connector	EB L	23.2	C		WB TT/R	17.1	B		
	EB T	21.1	C	Holly Lane	NB L/T/R	36.2	D		
	EB R	6.4	A	Exit 5 NB Off-Ramp	SB L	26.3	C		
Metro Park Drive	WB L	25.7	C		SB T/R	11.5	B		
	WB T/R	23.9	C	OVERALL			17.3	B	
Wolf Road	NB L	33.3	C	Airport Connector & Albany Shaker Road					
	NB TT	12.0	B	Albany Shaker Road	EB TT	5.8	A		
	NB R	6.7	A		EB RR	3.6	A		
Wolf Road	SB L	13.3	B	Albany Shaker Road	WB L	0.0	A		
	SB TT	20.8	C		WB TT	4.0	A		
	SB R	6.4	A	Airport Connector	NB LL	37.2	D		
OVERALL			NB R		5.4	A			
Exit 4 NB Off-Ramp & Wolf Road				OVERALL				10.5	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector					
	EB R	-	-	Diamond NB Off-Ramp	NB L	15.6	B		
Wolf Road	NB TTT	-	-		NB R	7.3	A		
	SB TT	-	-	Airport Connector	WB T	18.8	B		
OVERALL			-	Airport Connector	EB L	39.3	D		
Albany Shaker Road & Wolf Road					EB T	6.9	A		
Albany Shaker Road	EB TT/R	5.0	A	OVERALL			15.5	B	
	EB R	4.4	A	Diamond SB Ramps & Airport Connector					
Albany Shaker Road	WB L	7.6	A	Diamond SB Off-Ramp	SB L	15.4	B		
	WB T T	4.7	A		SB R	5.0	A		
Wolf Road	NB L	29.9	C	Airport Connector	WB L	2.7	A		
	NB R	7.5	A		WB T	10.2	B		
OVERALL			6.7	A	Airport Connector	EB T	8.0	A	
				EB R		2.4	A		
				OVERALL			8.2	A	

Overall Network Vehicle Hours of Delay:

171.2

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2016 (ETC) Diamond Alternative - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	55.5	E	Albany Shaker Road	EB L	24.0	C
	EB TT	19.6	B		EB TT	4.6	A
Central Avenue	WB TTT	37.7	D	Albany Shaker Road	WB TT/R	18.7	B
	WB R	21.0	C		Old Wolf Road	SB LL	31.7
Exit 2 NB Off-Ramp	NB TTT	52.1	D	SB R		23.4	C
Wolf Road	SB LL	59.3	E	OVERALL		18.2	B
	SB RR	24.6	C	Old Wolf Road & CD Road			
OVERALL		35.5	D	Site Driveway	EB L/T/R	6.5	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	15.5	B
Sand Creek Road	EB L	110.2	F	Old Wolf Road	NB L/T/R	8.9	A
	EB T	90.5	F	Old Wolf Road	SB L/T/R	7.8	A
	EB R	46.8	D	OVERALL		11.3	B
Sand Creek Road	WB L	152.9	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	162.9	F	Watervliet Shaker Road	EB L/TT/R	59.2	E
	WB R	86.0	F	Watervliet Shaker Road	WB LT	25.2	C
Wolf Road	NB L	61.8	E	Exit 5 SB Off-Ramp	SB L	38.0	D
	NB TT	33.8	C	Sherwood Drive	SB T/R	8.2	A
	NB R	12.0	B		SB L/T/R	49.9	D
Wolf Road	SB L	62.1	E	OVERALL		42.7	D
	SB TT	37.3	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	20.1	C	Watervliet Shaker Road	EB L	34.0	C
OVERALL		68.8	E	EB T/R	12.7	B	
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	19.0	B
Airport Connector	EB L	27.2	C	WB TT/R	22.1	C	
	EB T	28.8	C	Holly Lane	NB L/T/R	39.0	D
	EB R	14.3	B	Exit 5 NB Off-Ramp	SB L	34.4	C
Metro Park Drive	WB L	21.4	C		SB T/R	11.7	B
	WB T/R	33.8	C	OVERALL		23.8	C
Wolf Road	NB L	40.0	D	Airport Connector & Albany Shaker Road			
	NB TT	20.4	C	Albany Shaker Road	EB TT	22.6	C
	NB R	7.8	A		EB RR	7.0	A
Wolf Road	SB L	20.5	C	Albany Shaker Road	WB L	56.1	E
	SB TT	28.3	C		WB TT	8.9	A
	SB R	13.1	B	Airport Connector	NB LL	31.1	C
OVERALL		24.2	C	NB R	7.0	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		19.1	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	21.7	C
Wolf Road	NB TTT	-	-		NB R	5.5	A
	SB TT	-	-	Airport Connector	WB T	21.0	C
OVERALL		-	-	Airport Connector	EB L	39.6	D
Albany Shaker Road & Wolf Road					EB T	7.6	A
Albany Shaker Road	EB TT/R	7.6	A	OVERALL		18.4	B
	EB R	5.0	A	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	25.6	C	Diamond SB Off-Ramp	SB L	20.6	C
	WB T T	7.1	A		SB R	9.9	A
Wolf Road	NB L	29.4	C	Airport Connector	WB L	38.2	D
	NB R	9.4	A		WB T	12.3	B
OVERALL		11.0	B	Airport Connector	EB T	18.0	B
					EB R	5.5	A
				OVERALL		14.3	B

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=share Overall Network Vehicle Hours of Delay:

321.3

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2026 (ETC+10) Diamond Alternative - AM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	40.5	D	Albany Shaker Road	EB L	18.8	B
	EB TT	20.2	C		EB TT	5.5	A
Central Avenue	WB TTT	37.7	D	Albany Shaker Road	WB TT/R	15.9	B
	WB R	8.0	A		Old Wolf Road	SB LL	30.8
Exit 2 NB Off-Ramp	NB TTT	39.5	D	SB R		27.4	C
Wolf Road	SB LL	46.4	D	OVERALL		20.7	C
	SB RR	7.0	A	Old Wolf Road & CD Road			
OVERALL		28.4	C	Site Driveway	EB L/T/R	8.3	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	13.2	B
Sand Creek Road	EB L	32.5	C	Old Wolf Road	NB L/T/R	21.0	C
	EB T	26.7	C	Old Wolf Road	SB L/T/R	17.9	B
	EB R	2.6	A	OVERALL		15.3	B
Sand Creek Road	WB L	34.7	C	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	30.2	C	Watervliet Shaker Road	EB L/TT/R	23.8	C
	WB R	5.0	A	Watervliet Shaker Road	WB LT	21.5	C
Wolf Road	NB L	42.6	D	Exit 5 SB Off-Ramp	SB L	32.5	C
	NB TT	16.3	B	Sherwood Drive	SB T/R	16.7	B
	NB R	7.9	A		SB L/T/R	28.0	C
Wolf Road	SB L	41.5	D	OVERALL		23.5	C
	SB TT	18.2	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	10.2	B	Watervliet Shaker Road	EB L	29.7	C
OVERALL		20.7	C	EB T/R	10.9	B	
Metro Park Drive/Airport Connector & Wolf Road				WB L	15.2	B	
Airport Connector	EB L	23.9	C	WB TT/R	19.6	B	
	EB T	21.3	C	Holly Lane	NB L/T/R	40.7	D
	EB R	6.3	A	Exit 5 NB Off-Ramp	SB L	29.5	C
Metro Park Drive	WB L	26.5	C	SB T/R	13.7	B	
	WB T/R	23.8	C	OVERALL		19.5	B
Wolf Road	NB L	33.0	C	Airport Connector & Albany Shaker Road			
	NB TT	14.4	B	Albany Shaker Road	EB TT	7.0	A
	NB R	7.1	A		EB RR	3.7	A
Wolf Road	SB L	17.8	B	Albany Shaker Road	WB L	0.0	A
	SB TT	21.2	C		WB TT	4.7	A
	SB R	6.3	A	Airport Connector	NB LL	36.5	D
OVERALL		18.5	B	NB R	6.0	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		11.4	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	16.0	B
Wolf Road	NB TTT	-	-	NB R	7.7	A	
	SB TT	-	-	Airport Connector	WB T	19.1	B
OVERALL		-	-	Airport Connector	EB L	40.9	D
Albany Shaker Road & Wolf Road					EB T	7.2	A
Albany Shaker Road	EB TT/R	5.1	A	OVERALL		15.8	B
	EB R	4.9	A	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	8.1	A	Diamond SB Off-Ramp	SB L	15.8	B
	WB T T	4.6	A		SB R	5.3	A
Wolf Road	NB L	30.1	C	Airport Connector	WB L	2.7	A
	NB R	7.6	A		WB T	10.8	B
OVERALL		6.8	A	Airport Connector	EB T	8.1	A
					EB R	2.4	A
				OVERALL		8.7	A

Overall Network Vehicle Hours of Delay:

190.2

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2026 (ETC+10) Diamond Alternative - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	54.9	D	Albany Shaker Road	EB L	26.9	C
	EB TT	19.9	B		EB TT	5.0	A
Central Avenue	WB TTT	38.8	D	Albany Shaker Road	WB TT/R	19.6	B
	WB R	21.8	C		Old Wolf Road	SB LL	30.5
Exit 2 NB Off-Ramp	NB TTT	54.1	D	SB R		23.1	C
Wolf Road	SB LL	61.1	E	OVERALL		18.6	B
	SB RR	25.2	C	Old Wolf Road & CD Road			
OVERALL		36.4	D	Site Driveway	EB L/T/R	6.5	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	16.5	B
Sand Creek Road	EB L	114.9	F	Old Wolf Road	NB L/T/R	9.8	A
	EB T	100.2	F	Old Wolf Road	SB L/T/R	9.3	A
	EB R	54.4	D	OVERALL		12.5	B
Sand Creek Road	WB L	169.8	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	179.5	F	Watervliet Shaker Road	EB L/TT/R	70.8	E
	WB R	98.7	F	Watervliet Shaker Road	WB LT	26.6	C
Wolf Road	NB L	67.9	E	Exit 5 SB Off-Ramp	SB L	39.3	D
	NB TT	33.5	C	Sherwood Drive	SB T/R	8.4	A
	NB R	11.3	B		SB L/T/R	46.6	D
Wolf Road	SB L	64.5	E	OVERALL		48.5	D
	SB TT	38.0	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	19.7	B	Watervliet Shaker Road	EB L	36.2	D
OVERALL		72.5	E	EB T/R	11.8	B	
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	23.6	C
Airport Connector	EB L	27.4	C	WB TT/R	23.6	C	
	EB T	30.4	C	Holly Lane	NB L/T/R	45.4	D
	EB R	15.7	B	Exit 5 NB Off-Ramp	SB L	35.8	D
Metro Park Drive	WB L	22.8	C		SB T/R	12.1	B
	WB T/R	36.9	D	OVERALL		24.8	C
Wolf Road	NB L	43.2	D	Airport Connector & Albany Shaker Road			
	NB TT	21.1	C	Albany Shaker Road	EB TT	23.4	C
	NB R	7.9	A		EB RR	7.4	A
Wolf Road	SB L	27.0	C	Albany Shaker Road	WB L	55.9	E
	SB TT	30.4	C		WB TT	9.1	A
	SB R	14.5	B	Airport Connector	NB LL	30.4	C
OVERALL		25.8	C	NB R	7.4	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		19.2	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	23.7	C
Wolf Road	NB TTT	-	-		NB R	5.7	A
	SB TT	-	-	Airport Connector	WB T	21.8	C
OVERALL		-	-	Airport Connector	EB L	41.7	D
Albany Shaker Road & Wolf Road					EB T	7.4	A
Albany Shaker Road	EB TT/R	8.6	A	OVERALL		19.4	B
	EB R	5.6	A	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	38.6	D	Diamond SB Off-Ramp	SB L	23.2	C
	WB T T	7.6	A		SB R	11.2	B
Wolf Road	NB L	27.7	C	Airport Connector	WB L	39.9	D
	NB R	9.0	A		WB T	12.5	B
OVERALL		12.8	B	Airport Connector	EB T	17.7	B
				EB R	5.8	A	
				OVERALL		15.2	B

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=share Overall Network Vehicle Hours of Delay:

348.4

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) Diamond Alternative - AM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	42.7	D	Albany Shaker Road	EB L	21.3	C
	EB TT	20.2	C		EB TT	6.3	A
Central Avenue	WB TTT	38.4	D	Albany Shaker Road	WB TT/R	19.8	B
	WB R	8.7	A		Old Wolf Road	SB LL	28.9
Exit 2 NB Off-Ramp	NB TTT	41.1	D	SB R		24.4	C
Wolf Road	SB LL	47.8	D	OVERALL		21.1	C
	SB RR	6.9	A	Old Wolf Road & CD Road			
OVERALL		29.2	C	Site Driveway	EB L/T/R	9.0	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	13.7	B
Sand Creek Road	EB L	33.7	C	Old Wolf Road	NB L/T/R	22.0	C
	EB T	28.4	C	Old Wolf Road	SB L/T/R	19.9	B
	EB R	2.6	A	OVERALL		16.2	B
Sand Creek Road	WB L	32.1	C	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	30.5	C	Watervliet Shaker Road	EB L/TT/R	25.9	C
	WB R	5.1	A	Watervliet Shaker Road	WB LT	28.5	C
Wolf Road	NB L	43.1	D	Exit 5 SB Off-Ramp	SB L	34.9	C
	NB TT	16.8	B	SB T/R	17.1	B	
	NB R	8.0	A	Sherwood Drive	SB L/T/R	28.6	C
Wolf Road	SB L	42.9	D	OVERALL		28.1	C
	SB TT	19.5	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	10.3	B	Watervliet Shaker Road	EB L	31.5	C
OVERALL		21.6	C	Watervliet Shaker Road	EB T/R	10.9	B
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	19.1	B
Airport Connector	EB L	25.1	C	WB TT/R	23.2	C	
	EB T	24.3	C	Holly Lane	NB L/T/R	38.9	D
	EB R	6.7	A	Exit 5 NB Off-Ramp	SB L	31.2	C
Metro Park Drive	WB L	27.0	C	SB T/R	15.7	B	
	WB T/R	23.2	C	OVERALL		21.9	C
Wolf Road	NB L	33.2	C	Airport Connector & Albany Shaker Road			
	NB TT	14.1	B	Albany Shaker Road	EB TT	8.0	A
	NB R	6.8	A		EB RR	3.7	A
Wolf Road	SB L	13.7	B	Albany Shaker Road	WB L	0.0	A
	SB TT	20.8	C		WB TT	5.3	A
	SB R	6.7	A	Airport Connector	NB LL	34.3	C
OVERALL		18.6	B	NB R	6.0	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		13.7	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	16.9	B
Wolf Road	NB TTT	-	-		NB R	8.2	A
	SB TT	-	-	Airport Connector	WB T	21.3	C
OVERALL		-	-	Airport Connector	EB L	41.2	D
Albany Shaker Road & Wolf Road					EB T	9.8	A
Albany Shaker Road	EB TT/R	3.8	A	OVERALL		16.9	B
	EB R	4.0	A	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	9.5	A	Diamond SB Off-Ramp	SB L	16.5	B
	WB T T	4.8	A		SB R	5.5	A
Wolf Road	NB L	30.2	C	Airport Connector	WB L	2.8	A
	NB R	7.3	A		WB T	14.2	B
OVERALL		6.3	A	Airport Connector	EB T	9.9	A
				EB R	2.4	A	
				OVERALL		10.5	B

Overall Network Vehicle Hours of Delay:

223.5

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2036 (ETC+20) Diamond Alternative - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	56.9	E	Albany Shaker Road	EB L	14.5	B
	EB TT	20.7	C		EB TT	2.7	A
Central Avenue	WB TTT	40.9	D	Albany Shaker Road	WB TT/R	22.9	C
	WB R	25.7	C		Old Wolf Road	SB LL	43.6
Exit 2 NB Off-Ramp	NB TTT	53.0	D	SB R		26.7	C
Wolf Road	SB LL	63.4	E	OVERALL		20.9	C
	SB RR	27.7	C	Old Wolf Road & CD Road			
OVERALL		37.9	D	Site Driveway	EB L/T/R	6.4	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	17.1	B
Sand Creek Road	EB L	120.8	F	Old Wolf Road	NB L/T/R	11.2	B
	EB T	110.9	F	Old Wolf Road	SB L/T/R	10.0	B
	EB R	62.1	E	OVERALL		13.5	B
Sand Creek Road	WB L	168.8	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	183.9	F	Watervliet Shaker Road	EB L/TT/R	80.7	F
	WB R	101.5	F	Watervliet Shaker Road	WB LT	27.5	C
Wolf Road	NB L	66.9	E	Exit 5 SB Off-Ramp	SB L	41.2	D
	NB TT	37.6	D		SB T/R	8.3	A
	NB R	14.9	B	Sherwood Drive	SB L/T/R	41.7	D
Wolf Road	SB L	66.3	E	OVERALL		53.1	D
	SB TT	38.1	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	20.3	C	Watervliet Shaker Road	EB L	37.5	D
OVERALL		75.4	E	EB T/R	10.6	B	
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	19.4	B
Airport Connector	EB L	31.5	C		WB TT/R	25.5	C
	EB T	28.6	C	Holly Lane	NB L/T/R	39.7	D
	EB R	16.9	B	Exit 5 NB Off-Ramp	SB L	36.7	D
Metro Park Drive	WB L	25.6	C		SB T/R	14.2	B
	WB T/R	37.4	D	OVERALL		25.6	C
Wolf Road	NB L	45.1	D	Airport Connector & Albany Shaker Road			
	NB TT	23.6	C	Albany Shaker Road	EB TT	28.1	C
	NB R	9.0	A		EB RR	8.3	A
Wolf Road	SB L	21.5	C	Albany Shaker Road	WB L	43.5	D
	SB TT	32.4	C		WB TT	11.3	B
	SB R	16.7	B	Airport Connector	NB LL	36.6	D
OVERALL		28.0	C	NB R	7.3	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		22.2	C
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	25.6	C
Wolf Road	NB TTT	-	-		NB R	6.3	A
	SB TT	-	-	Airport Connector	WB T	24.4	C
OVERALL		-	-	Airport Connector	EB L	51.7	D
Albany Shaker Road & Wolf Road					EB T	9.4	A
Albany Shaker Road	EB TT/R	17.4	B	OVERALL		22.4	C
	EB R	10.2	B	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	26.1	C	Diamond SB Off-Ramp	SB L	25.2	C
	WB T T	7.4	A		SB R	11.6	B
Wolf Road	NB L	35.7	D	Airport Connector	WB L	46.9	D
	NB R	10.7	B		WB T	15.5	B
OVERALL		15.8	B	Airport Connector	EB T	19.8	B
					EB R	6.3	A
				OVERALL		17.6	B

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=share Overall Network Vehicle Hours of Delay:

404.3

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2046 (ETC+30) Diamond Alternative - AM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	43.2	D	Albany Shaker Road	EB L	20.6	C
	EB TT	20.5	C		EB TT	6.4	A
Central Avenue	WB TTT	38.1	D	Albany Shaker Road	WB TT/R	21.7	C
	WB R	8.6	A		Old Wolf Road	SB LL	29.5
Exit 2 NB Off-Ramp	NB TTT	40.5	D	SB R		23.3	C
Wolf Road	SB LL	45.7	D	OVERALL		21.3	C
	SB RR	7.6	A	Old Wolf Road & CD Road			
OVERALL		29.1	C	Site Driveway	EB L/T/R	8.4	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	15.0	B
Sand Creek Road	EB L	33.2	C	Old Wolf Road	NB L/T/R	27.4	C
	EB T	29.3	C	Old Wolf Road	SB L/T/R	24.9	C
	EB R	2.5	A	OVERALL		18.9	B
Sand Creek Road	WB L	36.8	D	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	31.6	C	Watervliet Shaker Road	EB L/TT/R	25.8	C
	WB R	5.2	A	Watervliet Shaker Road	WB LT	26.3	C
Wolf Road	NB L	45.2	D	Exit 5 SB Off-Ramp	SB L	34.9	C
	NB TT	17.6	B	Sherwood Drive	SB T/R	18.3	B
	NB R	7.5	A		SB L/T/R	28.4	C
Wolf Road	SB L	48.1	D	OVERALL		27.0	C
	SB TT	19.8	B	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	11.0	B	Watervliet Shaker Road	EB L	31.7	C
OVERALL		22.5	C	Watervliet Shaker Road	EB T/R	11.4	B
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	17.7	B
Airport Connector	EB L	25.4	C	Watervliet Shaker Road	WB TT/R	23.7	C
	EB T	23.6	C	Holly Lane	NB L/T/R	37.5	D
	EB R	7.0	A	Exit 5 NB Off-Ramp	SB L	30.6	C
Metro Park Drive	WB L	23.2	C	SB T/R	15.1	B	
	WB T/R	22.4	C	OVERALL		22.0	C
Wolf Road	NB L	32.3	C	Airport Connector & Albany Shaker Road			
	NB TT	13.5	B	Albany Shaker Road	EB TT	9.6	A
	NB R	6.8	A		EB RR	4.0	A
Wolf Road	SB L	15.7	B	Albany Shaker Road	WB L	42.7	D
	SB TT	21.9	C		WB TT	5.5	A
	SB R	7.0	A	Airport Connector	NB LL	34.2	C
OVERALL		18.7	B	NB R	7.3	A	
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		14.0	B
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	17.1	B
Wolf Road	NB TTT	-	-	NB R	8.1	A	
	SB TT	-	-	Airport Connector	WB T	21.9	C
OVERALL		-	-	Airport Connector	EB L	41.3	D
Albany Shaker Road & Wolf Road					EB T	9.7	A
Albany Shaker Road	EB TT/R	4.9	A	OVERALL		17.0	B
	EB R	4.5	A	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	14.8	B	Diamond SB Off-Ramp	SB L	16.2	B
	WB T T	5.1	A		SB R	5.7	A
Wolf Road	NB L	30.4	C	Airport Connector	WB L	2.8	A
	NB R	7.8	A		WB T	14.2	B
OVERALL		7.5	A	Airport Connector	EB T	9.5	A
					EB R	2.5	A
				OVERALL		10.3	B

Overall Network Vehicle Hours of Delay:

228.6

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

PIN 1721.51
I-87 Exit 3/4 Access Improvements
VISSIM Analysis Results
2046 (ETC+30) Diamond Alternative - PM Peak Hour

Signalized Intersections				Signalized Intersections			
Intersection/Approach		Delay *	LOS	Intersection/Approach		Delay *	LOS
Central Avenue & Wolf Road				Albany Shaker Road & Old Wolf Road			
Central Avenue	EB LL	57.2	E	Albany Shaker Road	EB L	13.2	B
	EB TT	21.2	C		EB TT	2.0	A
Central Avenue	WB TTT	41.2	D	Albany Shaker Road	WB TT/R	24.0	C
	WB R	25.2	C		Old Wolf Road	SB LL	48.7
Exit 2 NB Off-Ramp	NB TTT	53.6	D	SB R		26.7	C
Wolf Road	SB LL	60.2	E	OVERALL		23.0	C
	SB RR	27.6	C	Old Wolf Road & CD Road			
OVERALL		37.9	D	Site Driveway	EB L/T/R	6.8	A
Sand Creek Road & Wolf Road				CD Road	WB L/T/R	17.2	B
Sand Creek Road	EB L	120.9	F	Old Wolf Road	NB L/T/R	11.7	B
	EB T	111.5	F	Old Wolf Road	SB L/T/R	10.7	B
	EB R	65.1	E	OVERALL		13.9	B
Sand Creek Road	WB L	174.5	F	Exit 5 SB Ramps & Watervliet Shaker Road			
	WB T	169.4	F	Watervliet Shaker Road	EB L/TT/R	82.0	F
	WB R	107.1	F	Watervliet Shaker Road	WB LT	27.8	C
Wolf Road	NB L	67.4	E	Exit 5 SB Off-Ramp	SB L	41.4	D
	NB TT	37.3	D		SB T/R	8.4	A
	NB R	14.3	B	Sherwood Drive	SB L/T/R	48.2	D
Wolf Road	SB L	66.3	E	OVERALL		53.8	D
	SB TT	39.2	D	Exit 5 NB Ramps & Watervliet Shaker Road			
	SB R	21.6	C	Watervliet Shaker Road	EB L	36.1	D
OVERALL		76.6	E		EB T/R	12.6	B
Metro Park Drive/Airport Connector & Wolf Road				Watervliet Shaker Road	WB L	22.7	C
Airport Connector	EB L	33.5	C		WB TT/R	25.4	C
	EB T	28.8	C	Holly Lane	NB L/T/R	46.3	D
	EB R	18.6	B	Exit 5 NB Off-Ramp	SB L	37.2	D
Metro Park Drive	WB L	30.5	C		SB T/R	15.6	B
	WB T/R	44.9	D	OVERALL		25.9	C
Wolf Road	NB L	50.5	D	Airport Connector & Albany Shaker Road			
	NB TT	25.2	C	Albany Shaker Road	EB TT	28.6	C
	NB R	10.6	B		EB RR	9.7	A
Wolf Road	SB L	49.3	D	Albany Shaker Road	WB L	77.7	E
	SB TT	38.6	D		WB TT	8.6	A
	SB R	22.1	C	Airport Connector	NB LL	36.5	D
OVERALL		31.9	C		NB R	9.0	A
Exit 4 NB Off-Ramp & Wolf Road				OVERALL		23.2	C
Exit 4 NB Off-Ramp	EB LL	-	-	Diamond NB Ramps & Airport Connector			
	EB R	-	-	Diamond NB Off-Ramp	NB L	31.6	C
Wolf Road	NB TTT	-	-		NB R	8.6	A
	SB TT	-	-	Airport Connector	WB T	32.2	C
OVERALL		-	-	Airport Connector	EB L	57.8	E
Albany Shaker Road & Wolf Road					EB T	11.1	B
Albany Shaker Road	EB TT/R	19.6	B	OVERALL		27.6	C
	EB R	11.9	B	Diamond SB Ramps & Airport Connector			
Albany Shaker Road	WB L	24.8	C	Diamond SB Off-Ramp	SB L	32.5	C
	WB T T	7.3	A		SB R	14.4	B
Wolf Road	NB L	36.2	D	Airport Connector	WB L	50.9	D
	NB R	11.0	B		WB T	15.6	B
OVERALL		16.5	B	Airport Connector	EB T	29.7	C
					EB R	13.8	B
				OVERALL		22.6	C

* Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=share Overall Network Vehicle Hours of Delay:

470.9

Attachment 2

Emission Factors

CO Rate 2016

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	23.95	23.86	23.86	23.87	23.87	23.87	23.81	23.81	23.93	23.93	23.96	23.96
	5	17.27	17.07	17.07	17.04	17.04	17.04	16.99	16.99	17.05	17.05	17.04	17.04
	7.5	14.47	14.67	14.67	14.67	14.67	14.67	14.35	14.35	14.71	14.71	14.73	14.73
	10	13.07	13.47	13.47	13.49	13.49	13.49	13.02	13.02	13.54	13.54	13.57	13.57
	15	11.59	12.22	12.22	12.29	12.29	12.29	11.75	11.75	12.38	12.38	12.45	12.45
	20	11.11	11.55	11.55	11.67	11.67	11.67	11.44	11.44	11.78	11.78	11.88	11.88
	25	10.81	11.17	11.17	11.3	11.3	11.3	11.24	11.24	11.43	11.43	11.55	11.55
	30	10.62	11.01	11.01	11.16	11.16	11.16	11.12	11.12	11.29	11.29	11.43	11.43
	35	10.58	11.01	11.01	11.17	11.17	11.17	11.13	11.13	11.31	11.31	11.45	11.45
	40	10.82	11.28	11.28	11.45	11.45	11.45	11.42	11.42	11.6	11.6	11.75	11.75
	45	11.09	11.57	11.57	11.75	11.75	11.75	11.72	11.72	11.91	11.91	12.07	12.07
	50	11.38	11.88	11.88	12.06	12.06	12.06	12.03	12.03	12.22	12.22	12.39	12.39
	55	11.71	12.21	12.21	12.4	12.4	12.4	12.36	12.36	12.55	12.55	12.72	12.72
	60	12.11	12.6	12.6	12.78	12.78	12.78	12.74	12.74	12.94	12.94	13.1	13.1
	65	12.57	13.02	13.02	13.19	13.19	13.19	13.15	13.15	13.34	13.34	13.49	13.49

Note:

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

VOC Rate 2016

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	3.22	3.04	3.04	2.99	2.99	2.99	2.98	2.98	2.96	2.96	0.3	0.3
	5	1.27	1.18	1.18	1.16	1.16	1.16	1.15	1.15	1.14	1.14	1.12	1.12
	7.5	0.9	0.85	0.85	0.83	0.83	0.83	0.81	0.81	0.81	0.81	0.8	0.8
	10	0.72	0.68	0.68	0.66	0.66	0.66	0.64	0.64	0.65	0.65	0.64	0.64
	15	0.56	0.53	0.53	0.52	0.52	0.52	0.5	0.5	0.51	0.51	0.5	0.5
	20	0.47	0.44	0.44	0.43	0.43	0.43	0.42	0.42	0.42	0.42	0.41	0.41
	25	0.43	0.4	0.4	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.38	0.38
	30	0.41	0.38	0.38	0.37	0.37	0.37	0.36	0.36	0.36	0.36	0.35	0.35
	35	0.39	0.36	0.36	0.35	0.35	0.35	0.35	0.35	0.34	0.34	0.34	0.34
	40	0.37	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32	0.32
	45	0.36	0.33	0.33	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.31	0.31
	50	0.35	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.31	0.31
	55	0.34	0.32	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.3	0.3
	60	0.34	0.32	0.32	0.31	0.31	0.31	0.31	0.31	0.3	0.3	0.3	0.3
	65	0.34	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.3	0.3	0.3	0.3

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

NOx Rate 2016

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	1.02	0.78	0.78	0.72	0.72	0.72	0.74	0.74	0.67	0.67	0.3	0.3
	5	0.92	0.69	0.69	0.63	0.63	0.63	0.66	0.66	0.59	0.59	0.54	0.54
	7.5	0.8	0.61	0.61	0.56	0.56	0.56	0.55	0.55	0.52	0.52	0.48	0.48
	10	0.74	0.57	0.57	0.52	0.52	0.52	0.5	0.5	0.48	0.48	0.44	0.44
	15	0.64	0.5	0.5	0.45	0.45	0.45	0.42	0.42	0.42	0.42	0.38	0.38
	20	0.61	0.46	0.46	0.41	0.41	0.41	0.41	0.41	0.38	0.38	0.34	0.34
	25	0.6	0.43	0.43	0.39	0.39	0.39	0.4	0.4	0.36	0.36	0.32	0.32
	30	0.59	0.42	0.42	0.38	0.38	0.38	0.4	0.4	0.35	0.35	0.31	0.31
	35	0.59	0.41	0.41	0.37	0.37	0.37	0.4	0.4	0.34	0.34	0.31	0.31
	40	0.61	0.42	0.42	0.38	0.38	0.38	0.4	0.4	0.35	0.35	0.31	0.31
	45	0.63	0.44	0.44	0.39	0.39	0.39	0.42	0.42	0.36	0.36	0.32	0.32
	50	0.66	0.46	0.46	0.41	0.41	0.41	0.44	0.44	0.38	0.38	0.33	0.33
	55	0.71	0.49	0.49	0.44	0.44	0.44	0.46	0.46	0.4	0.4	0.35	0.35
	60	0.77	0.53	0.53	0.47	0.47	0.47	0.5	0.5	0.42	0.42	0.37	0.37
	65	0.86	0.59	0.59	0.52	0.52	0.52	0.54	0.54	0.46	0.46	0.4	0.4

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

VOC Rate 2026

Functional Classification

	1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	2.22	2.15	2.15	2.15	2.14	2.13	2.13	2.13	2.13	0.3	0.3
	5	0.88	0.83	0.83	0.83	0.82	0.82	0.82	0.82	0.82	0.81	0.81
	7.5	0.61	0.59	0.59	0.59	0.58	0.57	0.57	0.57	0.57	0.57	0.57
	10	0.48	0.46	0.46	0.46	0.45	0.44	0.44	0.45	0.45	0.45	0.45
	15	0.36	0.35	0.35	0.35	0.34	0.33	0.33	0.34	0.34	0.34	0.34
	20	0.29	0.27	0.27	0.27	0.27	0.26	0.26	0.27	0.27	0.26	0.26
	25	0.26	0.25	0.25	0.25	0.24	0.24	0.24	0.24	0.24	0.24	0.24
	30	0.24	0.23	0.23	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.22
	35	0.22	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.2	0.2
	40	0.21	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	45	0.2	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	50	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	55	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	60	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	65	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

CO Rate 2026

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	21.59	21.43	21.43	21.43	21.43	21.43	21.37	21.37	21.48	21.48	21.49	21.49
	5	15.73	15.51	15.51	15.47	15.47	15.47	15.42	15.42	15.48	15.48	15.47	15.47
	7.5	13.24	13.39	13.39	13.39	13.39	13.39	13.08	13.08	13.43	13.43	13.44	13.44
	10	12	12.33	12.33	12.35	12.35	12.35	11.91	11.91	12.4	12.4	12.43	12.43
	15	10.66	11.21	11.21	11.28	11.28	11.28	10.79	10.79	11.37	11.37	11.44	11.44
	20	10.22	10.62	10.62	10.72	10.72	10.72	10.51	10.51	10.83	10.83	10.93	10.93
	25	9.95	10.27	10.27	10.4	10.4	10.4	10.34	10.34	10.52	10.52	10.64	10.64
	30	9.78	10.13	10.13	10.27	10.27	10.27	10.23	10.23	10.4	10.4	10.53	10.53
	35	9.75	10.12	10.12	10.28	10.28	10.28	10.24	10.24	10.42	10.42	10.55	10.55
	40	9.96	10.37	10.37	10.53	10.53	10.53	10.5	10.5	10.68	10.68	10.83	10.83
	45	10.21	10.64	10.64	10.81	10.81	10.81	10.77	10.77	10.96	10.96	11.11	11.11
	50	10.48	10.93	10.93	11.1	11.1	11.1	11.06	11.06	11.25	11.25	11.41	11.41
	55	10.78	11.23	11.23	11.4	11.4	11.4	11.36	11.36	11.56	11.56	11.71	11.71
	60	11.16	11.59	11.59	11.76	11.76	11.76	11.72	11.72	11.91	11.91	12.06	12.06
	65	11.58	11.98	11.98	12.14	12.14	12.14	12.1	12.1	12.29	12.29	12.43	12.43

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	0.45	0.39	0.39	0.37	0.37	0.37	0.37	0.37	0.36	0.36	0.3	0.3
	5	0.4	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.31	0.31	0.3	0.3
	7.5	0.33	0.3	0.3	0.28	0.28	0.28	0.26	0.26	0.27	0.27	0.26	0.26
	10	0.3	0.28	0.28	0.26	0.26	0.26	0.23	0.23	0.25	0.25	0.24	0.24
	15	0.25	0.24	0.24	0.22	0.22	0.22	0.19	0.19	0.21	0.21	0.2	0.2
	20	0.24	0.22	0.22	0.2	0.2	0.2	0.18	0.18	0.19	0.19	0.18	0.18
	25	0.24	0.2	0.2	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.17	0.17
	30	0.24	0.2	0.2	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.16	0.16
	35	0.24	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.16	0.16
	40	0.24	0.2	0.2	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.16	0.16
	45	0.25	0.21	0.21	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.17	0.17
	50	0.27	0.22	0.22	0.2	0.2	0.2	0.2	0.2	0.19	0.19	0.17	0.17
	55	0.29	0.23	0.23	0.21	0.21	0.21	0.21	0.21	0.2	0.2	0.18	0.18
	60	0.31	0.24	0.24	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.19	0.19
	65	0.34	0.26	0.26	0.24	0.24	0.24	0.24	0.24	0.22	0.22	0.2	0.2

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

CO Rate 2035

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	21.48	21.32	21.32	21.31	21.31	21.31	21.24	21.24	21.36	21.36	21.38	21.38
	5	15.67	15.43	15.43	15.39	15.39	15.39	15.34	15.34	15.41	15.41	15.39	15.39
	7.5	13.19	13.32	13.32	13.32	13.32	13.32	13.02	13.02	13.36	13.36	13.38	13.38
	10	11.95	12.27	12.27	12.29	12.29	12.29	11.86	11.86	12.34	12.34	12.37	12.37
	15	10.62	11.16	11.16	11.23	11.23	11.23	10.73	10.73	11.32	11.32	11.39	11.39
	20	10.18	10.57	10.57	10.67	10.67	10.67	10.46	10.46	10.78	10.78	10.88	10.88
	25	9.91	10.22	10.22	10.35	10.35	10.35	10.29	10.29	10.47	10.47	10.59	10.59
	30	9.74	10.08	10.08	10.22	10.22	10.22	10.18	10.18	10.36	10.36	10.49	10.49
	35	9.7	10.08	10.08	10.23	10.23	10.23	10.19	10.19	10.37	10.37	10.51	10.51
	40	9.92	10.32	10.32	10.49	10.49	10.49	10.44	10.44	10.64	10.64	10.78	10.78
	45	10.16	10.59	10.59	10.76	10.76	10.76	10.72	10.72	10.91	10.91	11.07	11.07
	50	10.43	10.87	10.87	11.05	11.05	11.05	11	11	11.2	11.2	11.36	11.36
	55	10.74	11.18	11.18	11.35	11.35	11.35	11.31	11.31	11.51	11.51	11.66	11.66
	60	11.11	11.53	11.53	11.7	11.7	11.7	11.66	11.66	11.86	11.86	12.01	12.01
	65	11.54	11.93	11.93	12.08	12.08	12.08	12.04	12.04	12.23	12.23	12.38	12.38

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

VOC Rate 2035

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	2.18	2.12	2.12	2.11	2.11	2.11	2.1	2.1	2.11	2.11	0.3	0.3
	5	0.84	0.81	0.81	0.81	0.81	0.81	0.8	0.8	0.8	0.8	0.8	0.8
	7.5	0.59	0.57	0.57	0.56	0.56	0.56	0.55	0.55	0.56	0.56	0.56	0.56
	10	0.46	0.45	0.45	0.44	0.44	0.44	0.43	0.43	0.44	0.44	0.44	0.44
	15	0.34	0.34	0.34	0.33	0.33	0.33	0.32	0.32	0.33	0.33	0.33	0.33
	20	0.27	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.26	0.26	0.26	0.26
	25	0.25	0.24	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
	30	0.23	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.21
	35	0.21	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	40	0.2	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	45	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	50	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	55	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	60	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	65	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

Functional Classification

		1	2	6	7	8	9	11	12	14	16	17	19
Average Vehicle Speed (mph)	2.5	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.3	0.3	0.3	0.3
	5	0.28	0.27	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
	7.5	0.22	0.23	0.23	0.23	0.23	0.23	0.21	0.21	0.22	0.22	0.22	0.22
	10	0.2	0.21	0.21	0.21	0.21	0.21	0.18	0.18	0.2	0.2	0.2	0.2
	15	0.15	0.18	0.18	0.17	0.17	0.17	0.14	0.14	0.17	0.17	0.17	0.17
	20	0.15	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.15	0.15	0.15	0.15
	25	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.14	0.14	0.14	0.14
	30	0.15	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13
	35	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
	40	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13
	45	0.16	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13
	50	0.16	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	55	0.17	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14
	60	0.18	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
	65	0.2	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16

- 1 Rural Interstate;
- 2 Rural Principal Arterial;
- 6 Rural Minor Arterial;
- 7 Rural Major Collectors;
- 8 Rural Minor Collectors;
- 9 Rural Local;
- 11 Urban Interstate;
- 12 Urban Freeways and Expressways;
- 14 Urban Principal Arterial;
- 16 Urban Minor Arterial;
- 17 Urban Collectors;
- 19 Urban Local;

PM Emission Rates

	1	2	6	7	8	9	11	12	14	16	17	19
LDGV	48.70%	51.40%	51.40%	52.70%	52.70%	52.70%	51.50%	51.50%	55.10%	55.10%	56.20%	56.20%
LDGT1	20.60%	21.70%	21.70%	22.20%	22.20%	22.20%	21.70%	21.70%	23.30%	23.30%	23.70%	23.70%
LDGT2	15.80%	17.40%	17.40%	18.20%	18.20%	18.20%	19.20%	19.20%	15.60%	15.60%	15.70%	15.70%
HDGV5	4.50%	2.80%	2.80%	2.00%	2.00%	2.00%	2.20%	2.20%	1.70%	1.70%	1.20%	1.20%
LDDV	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
LDDT34	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
HDDV8b	10.00%	6.30%	6.30%	4.50%	4.50%	4.50%	5.00%	5.00%	3.90%	3.90%	2.80%	2.80%
MC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

NYS
DOT
Region 1
Winter
Vehicle
Mix

2016	1	2	6	7	8	9	11	12	14	16	17	19
LDGV	0.005357	0.005654	0.005654	0.005797	0.005797	0.005797	0.005665	0.005665	0.006061	0.006061	0.006182	0.006182
LDGT1	0.002266	0.002387	0.002387	0.002442	0.002442	0.002442	0.002387	0.002387	0.002563	0.002563	0.002607	0.002607
LDGT2	0.001738	0.001914	0.001914	0.002002	0.002002	0.002002	0.002112	0.002112	0.001716	0.001716	0.001727	0.001727
HDGV5	0.001305	0.000812	0.000812	0.00058	0.00058	0.00058	0.000638	0.000638	0.000493	0.000493	0.000348	0.000348
LDDV	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042
LDDT34	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069
HDDV8b	0.0085	0.005355	0.005355	0.003825	0.003825	0.003825	0.00425	0.00425	0.003315	0.003315	0.00238	0.00238
MC	0	0	0	0	0	0	0	0	0	0	0	0
total	0.019277	0.016233	0.016233	0.014757	0.014757	0.014757	0.015163	0.015163	0.014259	0.014259	0.013355	0.013355
2026	1	2	6	7	8	9	11	12	14	16	17	19
LDGV	0.005357	0.005654	0.005654	0.005797	0.005797	0.005797	0.005665	0.005665	0.006061	0.006061	0.006182	0.006182
LDGT1	0.002266	0.002387	0.002387	0.002442	0.002442	0.002442	0.002387	0.002387	0.002563	0.002563	0.002607	0.002607
LDGT2	0.001738	0.001914	0.001914	0.002002	0.002002	0.002002	0.002112	0.002112	0.001716	0.001716	0.001727	0.001727
HDGV5	0.001125	0.0007	0.0007	0.0005	0.0005	0.0005	0.00055	0.00055	0.000425	0.000425	0.0003	0.0003
LDDV	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028
LDDT34	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048
HDDV8b	0.0038	0.002394	0.002394	0.00171	0.00171	0.00171	0.0019	0.0019	0.001482	0.001482	0.001064	0.001064
MC	0	0	0	0	0	0	0	0	0	0	0	0
total	0.014362	0.013125	0.013125	0.012527	0.012527	0.012527	0.01269	0.01269	0.012323	0.012323	0.011956	0.011956
2035	1	2	6	7	8	9	11	12	14	16	17	19
LDGV	0.005357	0.005654	0.005654	0.005797	0.005797	0.005797	0.005665	0.005665	0.006061	0.006061	0.006182	0.006182
LDGT1	0.002266	0.002387	0.002387	0.002442	0.002442	0.002442	0.002387	0.002387	0.002563	0.002563	0.002607	0.002607
LDGT2	0.001738	0.001914	0.001914	0.002002	0.002002	0.002002	0.002112	0.002112	0.001716	0.001716	0.001727	0.001727
HDGV5	0.000855	0.000532	0.000532	0.00038	0.00038	0.00038	0.000418	0.000418	0.000323	0.000323	0.000228	0.000228
LDDV	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016
LDDT34	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048	0.000048
HDDV8b	0.0029	0.001827	0.001827	0.001305	0.001305	0.001305	0.00145	0.00145	0.001131	0.001131	0.000812	0.000812
MC	0	0	0	0	0	0	0	0	0	0	0	0
total	0.01318	0.012378	0.012378	0.01199	0.01199	0.01199	0.012096	0.012096	0.011858	0.011858	0.01162	0.01162

PM 2.5

PM Emission Rates

PM 10	2016	1	2	6	7	8	9	11	12	14	16	17	19
	LDGV	0.012175	0.01285	0.01285	0.013175	0.013175	0.013175	0.012875	0.012875	0.013775	0.013775	0.01405	0.01405
	LDGT1	0.00515	0.005425	0.005425	0.00555	0.00555	0.00555	0.005425	0.005425	0.005825	0.005825	0.005925	0.005925
	LDGT2	0.00395	0.00435	0.00435	0.00455	0.00455	0.00455	0.0048	0.0048	0.0039	0.0039	0.003925	0.003925
	HDGV5	0.002205	0.001372	0.001372	0.00098	0.00098	0.00098	0.001078	0.001078	0.000833	0.000833	0.000588	0.000588
	LDDV	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058	0.000058
	LDDT34	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114	0.000114
	HDDV8b	0.0125	0.007875	0.007875	0.005625	0.005625	0.005625	0.00625	0.00625	0.004875	0.004875	0.0035	0.0035
	MC	0	0	0	0	0	0	0	0	0	0	0	0
	total	0.036152	0.032044	0.032044	0.030052	0.030052	0.030052	0.0306	0.0306	0.02938	0.02938	0.02816	0.02816
	2026	1	2	6	7	8	9	11	12	14	16	17	19
	LDGV	0.012175	0.01285	0.01285	0.013175	0.013175	0.013175	0.012875	0.012875	0.013775	0.013775	0.01405	0.01405
	LDGT1	0.00515	0.005425	0.005425	0.00555	0.00555	0.00555	0.005425	0.005425	0.005825	0.005825	0.005925	0.005925
	LDGT2	0.00395	0.00435	0.00435	0.00455	0.00455	0.00455	0.0048	0.0048	0.0039	0.0039	0.003925	0.003925
	HDGV5	0.001935	0.001204	0.001204	0.00086	0.00086	0.00086	0.000946	0.000946	0.000731	0.000731	0.000516	0.000516
	LDDV	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043	0.000043
	LDDT34	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009
	HDDV8b	0.0074	0.004662	0.004662	0.00333	0.00333	0.00333	0.0037	0.0037	0.002886	0.002886	0.002072	0.002072
	MC	0	0	0	0	0	0	0	0	0	0	0	0
	total	0.030743	0.028624	0.028624	0.027598	0.027598	0.027598	0.027879	0.027879	0.02725	0.02725	0.026621	0.026621
	2035	1	2	6	7	8	9	11	12	14	16	17	19
	LDGV	0.012175	0.01285	0.01285	0.013175	0.013175	0.013175	0.012875	0.012875	0.013775	0.013775	0.01405	0.01405
	LDGT1	0.00515	0.005425	0.005425	0.00555	0.00555	0.00555	0.005425	0.005425	0.005825	0.005825	0.005925	0.005925
	LDGT2	0.00395	0.00435	0.00435	0.00455	0.00455	0.00455	0.0048	0.0048	0.0039	0.0039	0.003925	0.003925
	HDGV5	0.00162	0.001008	0.001008	0.00072	0.00072	0.00072	0.000792	0.000792	0.000612	0.000612	0.000432	0.000432
	LDDV	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
	LDDT34	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009
	HDDV8b	0.0064	0.004032	0.004032	0.00288	0.00288	0.00288	0.0032	0.0032	0.002496	0.002496	0.001792	0.001792
	MC	0	0	0	0	0	0	0	0	0	0	0	0
	total	0.029415	0.027785	0.027785	0.026995	0.026995	0.026995	0.027212	0.027212	0.026728	0.026728	0.026244	0.026244

